ASM-40CD

Dual High-Speed Short-Range Modem Card

Version 1.0

LRS-24 Module

RAD
data communications
Innovative Access Solutions

ASM-40CD

Dual High-Speed Short-Range Modem Card

Version 1.0

Installation and Operation Manual

Notice

For further information contact RAD at the address below or contact your local distributor.

International Headquarters **RAD Data Communications Ltd.**	**North America Headquarters** **RAD Data Communications Inc.**
24 Raoul Wallenberg Street Tel Aviv 69719, Israel Tel: 972-3-6458181 Fax: 972-3-6498250, 6474436 E-mail: market@rad.com	900 Corporate Drive Mahwah, NJ 07430, USA Tel: (201) 5291100, Toll free: 1-800-4447234 Fax: (201) 5295777 E-mail: market@radusa.com

Limited Warranty

RAD warrants to DISTRIBUTOR that the hardware in the ASM-40CD to be delivered hereunder shall be free of defects in material and workmanship under normal use and service for a period of twelve (12) months following the date of shipment to DISTRIBUTOR.

If, during the warranty period, any component part of the equipment becomes defective by reason of material or workmanship, and DISTRIBUTOR immediately notifies RAD of such defect, RAD shall have the option to choose the appropriate corrective action: a) supply a replacement part, or b) request return of equipment to its plant for repair, or c) perform necessary repair at the equipment's location. In the event that RAD requests the return of equipment, each party shall pay one-way shipping costs.

RAD shall be released from all obligations under its warranty in the event that the equipment has been subjected to misuse, neglect, accident or improper installation, or if repairs or modifications were made by persons other than RAD's own authorized service personnel, unless such repairs by others were made with the written consent of RAD.

The above warranty is in lieu of all other warranties, expressed or implied. There are no warranties which extend beyond the face hereof, including, but not limited to, warranties of merchantability and fitness for a particular purpose, and in no event shall RAD be liable for consequential damages.

RAD shall not be liable to any person for any special or indirect damages, including, but not limited to, lost profits from any cause whatsoever arising from or in any way connected with the manufacture, sale, handling, repair, maintenance or use of the ASM-40CD, and in no event shall RAD's liability exceed the purchase price of the ASM-40CD.

DISTRIBUTOR shall be responsible to its customers for any and all warranties which it makes relating to ASM-40CD and for ensuring that replacements and other adjustments required in connection with the said warranties are satisfactory.

Software components in the ASM-40CD are provided "as is" and without warranty of any kind. RAD disclaims all warranties including the implied warranties of merchantability and fitness for a particular purpose. RAD shall not be liable for any loss of use, interruption of business or indirect, special, incidental or consequential damages of any kind. In spite of the above RAD shall do its best to provide error-free software products and shall offer free Software updates during the warranty period under this Agreement.

RAD's cumulative liability to you or any other party for any loss or damages resulting from any claims, demands, or actions arising out of or relating to this Agreement and the ASM-40CD shall not exceed the sum paid to RAD for the purchase of the ASM-40CD. In no event shall RAD be liable for any indirect, incidental, consequential, special, or exemplary damages or lost profits, even if RAD has been advised of the possibility of such damages.

This Agreement shall be construed and governed in accordance with the laws of the State of Israel.

Product Disposal

To facilitate the reuse, recycling and other forms of recovery of waste equipment in protecting the environment, the owner of this RAD product is required to refrain from disposing of this product as unsorted municipal waste at the end of its life cycle. Upon termination of the unit's use, customers should provide for its collection for reuse, recycling or other form of environmentally conscientious disposal.

General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

Safety Symbols

⚠️ *Warning*	This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

⚡	Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.

⏚	Protective earth: the marked lug or terminal should be connected to the building protective earth bus.

☢️ *Warning*	Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached.
	Please observe the following precautions:
	• Before turning on the equipment, make sure that the fiber optic cable is intact and is connected to the transmitter.
	• Do not attempt to adjust the laser drive current.
	• Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.
	• The use of optical devices with the equipment will increase eye hazard.
	• Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.
	ATTENTION: The laser beam may be invisible!

In some cases, the users may insert their own SFP laser transceivers into the product. Users are alerted that RAD cannot be held responsible for any damage that may result if non-compliant transceivers are used. In particular, users are warned to use only agency approved products that comply with the local laser safety regulations for Class 1 laser products.

Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. If an earth lug is provided on the product, it should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in earthed racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Connecting AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

In cases when the power distribution system is IT type, the switch must disconnect both poles simultaneously.

Connecting DC Power

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC power systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC power supply is electrically isolated from any AC source and that the installation complies with the local codes.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Before connecting the DC supply wires, ensure that power is removed from the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

If the DC power supply is floating, the switch must disconnect both poles simultaneously.

Connecting Data and Telecommunications Cables

Data and telecommunication interfaces are classified according to their safety status.

The following table lists the status of several standard interfaces. If the status of a given port differs from the standard one, a notice will be given in the manual.

Ports	Safety Status	
V.11, V.28, V.35, V.36, RS-530, X.21, 10 BaseT, 100 BaseT, Unbalanced E1, E2, E3, STM, DS-2, DS-3, S-Interface ISDN, Analog voice E&M	SELV	Safety Extra Low Voltage: Ports which do not present a safety hazard. Usually up to 30 VAC or 60 VDC.
xDSL (without feeding voltage), Balanced E1, T1, Sub E1/T1	TNV-1	Telecommunication Network Voltage-1: Ports whose normal operating voltage is within the limits of SELV, on which overvoltages from telecommunications networks are possible.
FXS (Foreign Exchange Subscriber)	TNV-2	Telecommunication Network Voltage-2: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are not possible. These ports are not permitted to be directly connected to external telephone and data lines.
FXO (Foreign Exchange Office), xDSL (with feeding voltage), U-Interface ISDN	TNV-3	Telecommunication Network Voltage-3: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are possible.

Always connect a given port to a port of the same safety status. If in doubt, seek the assistance of a qualified safety engineer.

Always make sure that the equipment is grounded before connecting telecommunication cables. Do not disconnect the ground connection before disconnecting all telecommunications cables.

Some SELV and non-SELV circuits use the same connectors. Use caution when connecting cables. Extra caution should be exercised during thunderstorms.

When using shielded or coaxial cables, verify that there is a good ground connection at both ends. The earthing and bonding of the ground connections should comply with the local codes.

The telecommunication wiring in the building may be damaged or present a fire hazard in case of contact between exposed external wires and the AC power lines. In order to reduce the risk,

there are restrictions on the diameter of wires in the telecom cables, between the equipment and the mating connectors.

Caution	To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cords.

Attention	Pour réduire les risques s'incendie, utiliser seulement des conducteurs de télécommunications 26 AWG ou de section supérieure.

Some ports are suitable for connection to intra-building or non-exposed wiring or cabling only. In such cases, a notice will be given in the installation instructions.

Do not attempt to tamper with any carrier-provided equipment or connection hardware.

Electromagnetic Compatibility (EMC)

The equipment is designed and approved to comply with the electromagnetic regulations of major regulatory bodies. The following instructions may enhance the performance of the equipment and will provide better protection against excessive emission and better immunity against disturbances.

A good earth connection is essential. When installing the equipment in a rack, make sure to remove all traces of paint from the mounting points. Use suitable lock-washers and torque. If an external grounding lug is provided, connect it to the earth bus using braided wire as short as possible.

The equipment is designed to comply with EMC requirements when connecting it with unshielded twisted pair (UTP) cables. However, the use of shielded wires is always recommended, especially for high-rate data. In some cases, when unshielded wires are used, ferrite cores should be installed on certain cables. In such cases, special instructions are provided in the manual.

Disconnect all wires which are not in permanent use, such as cables used for one-time configuration.

The compliance of the equipment with the regulations for conducted emission on the data lines is dependent on the cable quality. The emission is tested for UTP with 80 dB longitudinal conversion loss (LCL).

Unless otherwise specified or described in the manual, TNV-1 and TNV-3 ports provide secondary protection against surges on the data lines. Primary protectors should be provided in the building installation.

The equipment is designed to provide adequate protection against electro-static discharge (ESD). However, it is good working practice to use caution when connecting cables terminated with plastic connectors (without a grounded metal hood, such as flat cables) to sensitive data lines. Before connecting such cables, discharge yourself by touching earth ground or wear an ESD preventive wrist strap.

FCC-15 User Information

This equipment has been tested and found to comply with the limits of the Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Installation and Operation manual, may cause harmful interference to the radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Emission Requirements

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Warning per EN 55022 (CISPR-22)

Warning	This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user will be required to take adequate measures.
Avertissement	Cet appareil est un appareil de Classe A. Dans un environnement résidentiel, cet appareil peut provoquer des brouillages radioélectriques. Dans ces cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées.
Achtung	Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkströrungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Quick Start Guide

If you are familiar with ASM-40CD, use this guide to prepare the unit for operation.

1.   Installing ASM-40CD

➤ **To install the ASM-40CD card:**

1. Insert the ASM-40CD card into a slot of the LRS-24 chassis.

2. If using LRSI-F-5, check that the DTE1 and DTE2 jumpers have been set for the proper DTE interface type.

3. Insert the interface module (LRSI-F-5 or LRSI-F-14) into the upper section of LRS-24F or back of LRS-24B.

4. Connect the line and DCE cables

5. Connect a supervisory terminal to the LRS-24 chassis.

6. Power up the LRS-24 chassis.

2.   Configuring ASM-40CD

Accessing the Supervisory Terminal

➤ **To start the communication session:**

1. Connect a terminal to the RS-232 connector of the LRS-24 CM-2.

2. Start the communication session by typing: **NODEnn DEF PRM** (where nn is the slot number).

3. Select clock.

4. Select input impedance.

5. Select line coding.

Advanced Configuration

For further configuration:

- Configure the transmission parameters from the Modem Setup menu

- Configure the operational parameters from the Modem Advanced menu

- Configure the loopback, BER and LED tests from the Modem Diagnostic menu.

ASM-40CD is now ready to operate.

If you encounter any problems, refer to *Chapter 4*.

Contents

Chapter 1

Introduction

1.1 Overview

ASM-40CD is a card containing two independent synchronous high-speed short range modems, operating in full- or half-duplex mode over unconditioned lines. It is intended for installation in RAD's LRS-24, 12-slot hub, managed by an ASCII terminal, or the RADview SNMP management tools. The modem can also be used as an interface converter.

The unit operates at 13 different user-selectable data rates from 32 kbps to 2048 kbps, with ranges exceeding 1.75 km (1 mile).

The modem supports a variety of digital interfaces: V.24/RS-232 (64 kbps), V.35, X.21, RS-530, V.36/RS-449, Ethernet bridge (IR-ETH), or Ethernet/Fast Ethernet bridge (IR-ETH/QN).

Product Options

ASM-40CD is available in the following versions:

- ASM-40CDF for LRS-24F (ETSI)

- ASM-40CDB for LRS-24B (ANSI).

Applications

When used as a short range modem, ASM-40CD establishes a communication link with an identical module installed in a remote LRS-24 hub, or an ASM-40/R in a remote ASM-MN-214 hub, or with a standalone ASM-40 modem on the other end of the line. A typical system application for ASM-40CD units, mounted in an LRS-24 hub, is illustrated in *Figure 1-1.*
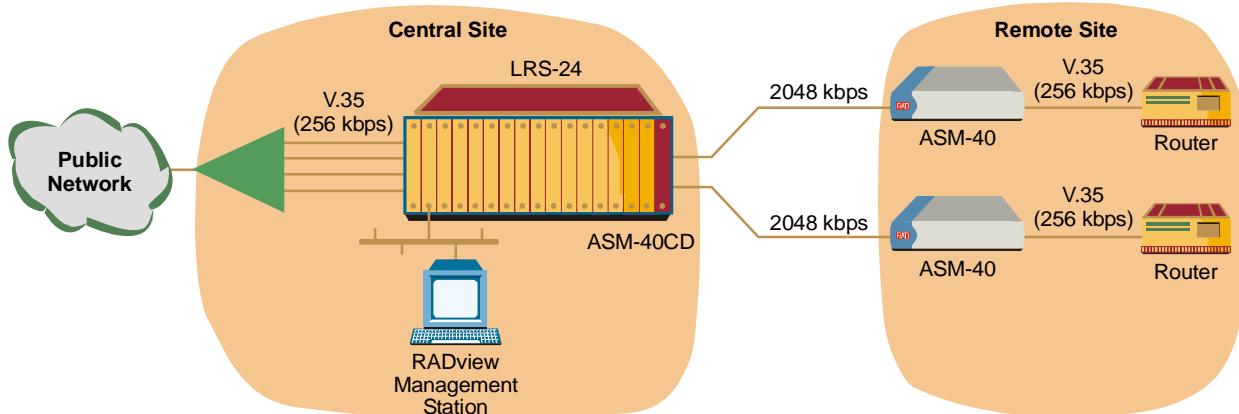
Figure 1-1. Typical ASM-40CD Application

Figure 1-2 shows a power feeding application, where ASM-40CD/P card receives the feed voltage from a standalone power supply unit, LRS-PS-FEED, connected to the LRS-24 modem rack and supplies the voltage to two RPT repeaters.
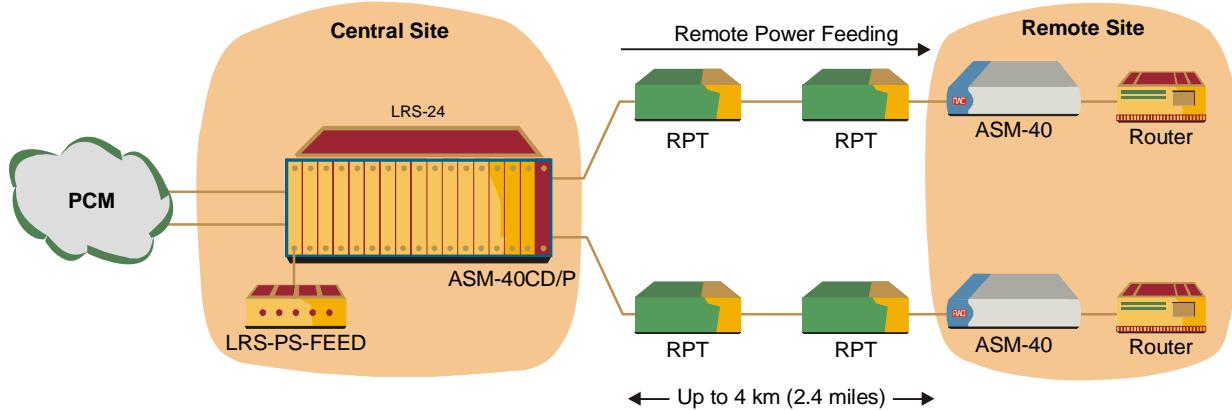
Figure 1-2. *ASM-40CD/P Providing Remote Power Feed to Repeaters*

Features

ASM-40CD offers selectable data rates from 32 kbps to 2048 kbps, and automatic rate detection in external mode for tail-end applications.

DTE Interface

The ASM-40CD DTE interface is provided using the appropriate interface module:

- LRSI-F-5 for V.24/RS-232 (64 kbps), V.35, X.21, RS-530, and V.36 interfaces (via adapter cables)

- LRSI-F-14 for IR-ETH (Ethernet bridge) or IR-ETH/QN (Ethernet/Fast Ethernet bridge with VLAN support).

Management

Full management of the local unit from an ASCII terminal or by a Unix HPOV application via the LRS-24 Ethernet segment is available. Simultaneous control and monitoring of local units is available without any impact or interference to the user data being transmitted.

Diagnostics

ASM-40CD has real-time alarms indicating status of local and remote units.

ASM-40CD has V.54 diagnostic capabilities (local analog, remote digital and local digital loopbacks) and an internal pseudo-random test pattern (511-bit) in accordance with the ITU V.52 standard.

Remote Power Feeding

The phantom current option for ASM-40CD provides a connection from an internal current supply to external G.703 repeaters (RPT-I, RPT-O) through the line. A standalone power supply, LRS-PS-FEED, serves as a power feeding source for this internal current supply, and must be ordered separately.
The LRS-PS-FEED is connected to the LRS-24 hub AC power supply interface module, LRSI-F-PSP/230/115. This interface module connects the feeding voltage to all the modules installed in the LRS-24. The phantom current is 50 mA.

1.2   Physical Description

Figure 1-3. ASM-40CD Card

The ASM-40CD front panel consists of LEDs, two fastening screws, and two handles for removing the card from the hub.

ASM-40CD front panel LEDs indicate module and system status with respect to transmitted data, signaling and serviceability (see *Figure 1-3*).

ASM-40CD couples to the LRS-24 hub backplane by three connectors, and couples to the digital interface card by four card connectors (see *Figure 1-4)*.
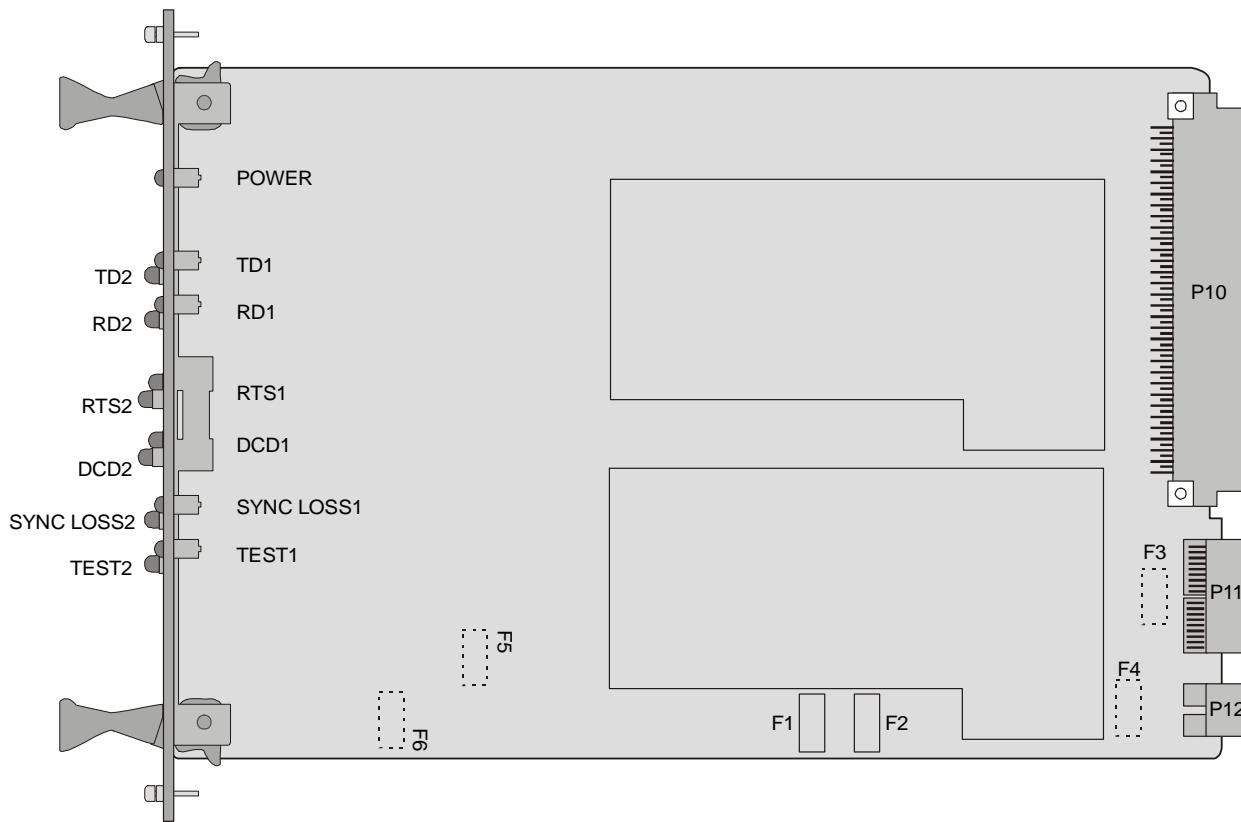
Figure 1-4. ASM-40CD Card Layout

Six fuses are used in ASM-40CD, with four on the backboard (see *Figure 1-4*). *Table 1-1* describes each fuse.

Table 1-1. Fuse Data

Name	Function
F1, F2	1A for the +135V phantom power supply line
F3	1A for the –5V power supply
F4	1A for the +5V power supply
F5	500 mA for phantom of modem 1 power supply
F6	500 mA for phantom of modem 2 power supply

1.3   Functional Description

Block Diagram

Figure 1-5 illustrates the circuits required for setting the correct configuration of the modem.
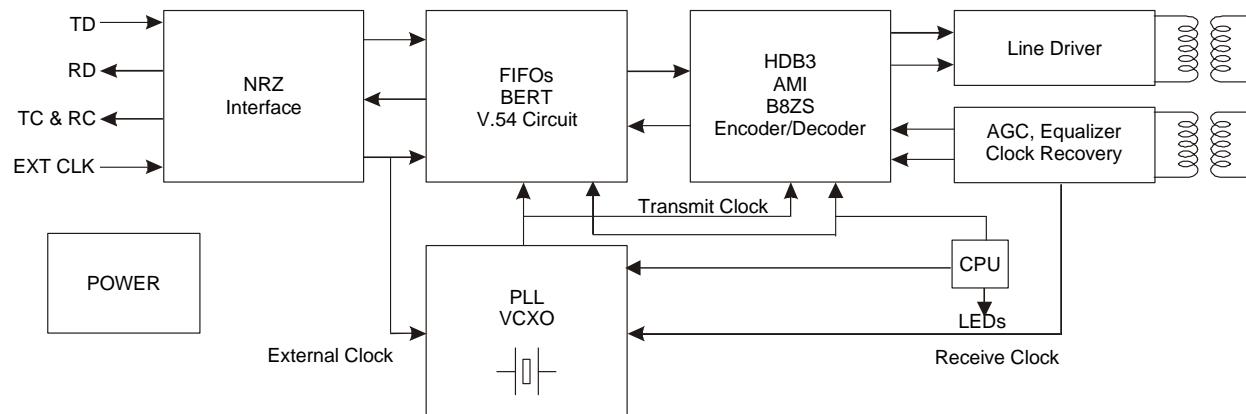
Figure 1-5. ASM-40CD Block Diagram

CPU

The CPU runs the communication with the hub common logic module (CM-2), using an internal protocol via lines LRS-TX and LRS-RX on the LRS-24 backplane. It also drives the LEDs for indicating status and failure conditions.

Power Supply

The power supply filters the ±5V outputs from the LRS-24 power supply.

Timing Generator

ASM-40CD utilizes a PLL, VCXO circuit.

ASM-40CD transmits data to the line at one of four selectable baud rates. This feature enables ASM-40CD to be used as a rate converter:

- **2048 kbps** – transmits data at rates of 32, 64, 128, 256, 512, 1024 and 2048 kbps

- **1536 kbps** – transmits data at rates of 192, 384, 768 and 1536 kbps

- **1544 kbps** – transmits data rates at 1544 kbps

- **1920 kbps** – transmits data at rates of 1920 kbps.

Transmit and receive timing may originate from the following sources:

- Internally

- Externally, from the data terminal

- Externally, from the receive signal (see *Figure 1-6)*.

The setting of XMT clock depends on:

- Internal clock – from the modem's internal crystal oscillator

- External clock – from the DTE

- Receive clock – recovered from received signal.

Internal FIFOs with PLL provide jitter attenuation and/or phase difference correction either from the incoming analog signal (line side) or from the external clock on the DTE side.

Encoder/Decoder

Provides the conversion from NRZ to HDB3, AMI or B87S on the transmission side and back to NRZ on the receive side.

Line Driver

Provides a three-level alternate mark inversion signal according to ITU G.703 standard.

Receiver

Provides the receive signal for the clock and data recovery circuitry.

NRZ Interface

On the digital side, provides as interface choice of V. 24, V.35, V36, X.21, RS-530, IR-ETH (Ethernet bridge) or IR-ETH/QN (Ethernet/Fast Ethernet bridge with VLAN support).

Diagnostics

ASM-40CD provides remote digital loopback, local digital loopback and local analog loopback diagnostics in compliance with the V.54 standard.

The local analog and remote digital loopbacks can be activated via the DTE interface:

- V.35 – pins "h" and "j"

- V.24 and RS-530 – pins 18 and 21.

Test Pattern Generator and Receiver (ITU V.52)

This feature allows for quick and easy testing of the local modem as well as the communication link. When the BERT command is activated, the circuit sends and checks a standard 511-bit pseudo random pattern. If errors are encountered, the ERR indicator lights up.

The test can be carried out in local loopback, in remote digital loopback or in normal point-to-point operation opposite a remote ASM-40 modem (press the PATT pushbutton on the remote unit or connect a bit error rate tester which uses the standard 511-bit pattern).
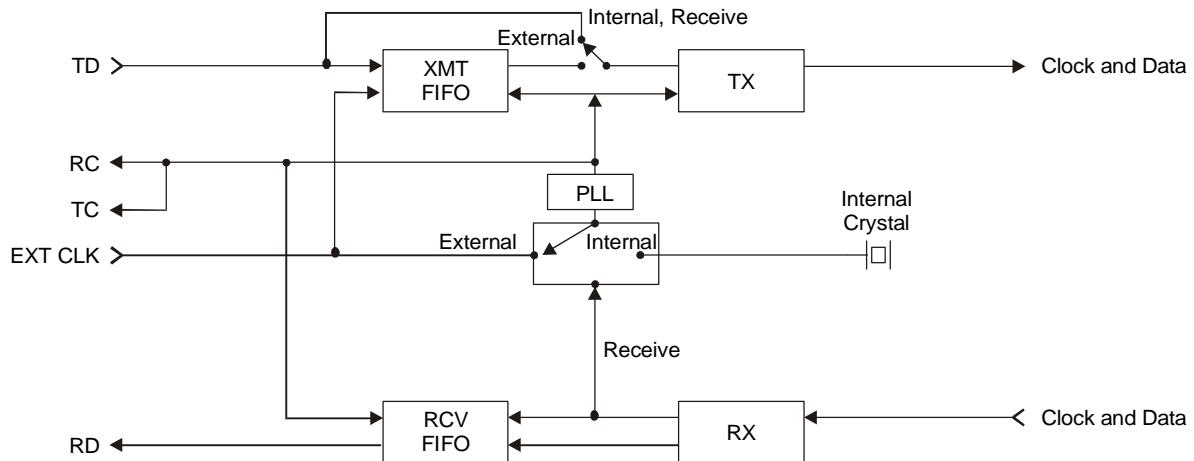
Figure 1-6. Clock Diagram
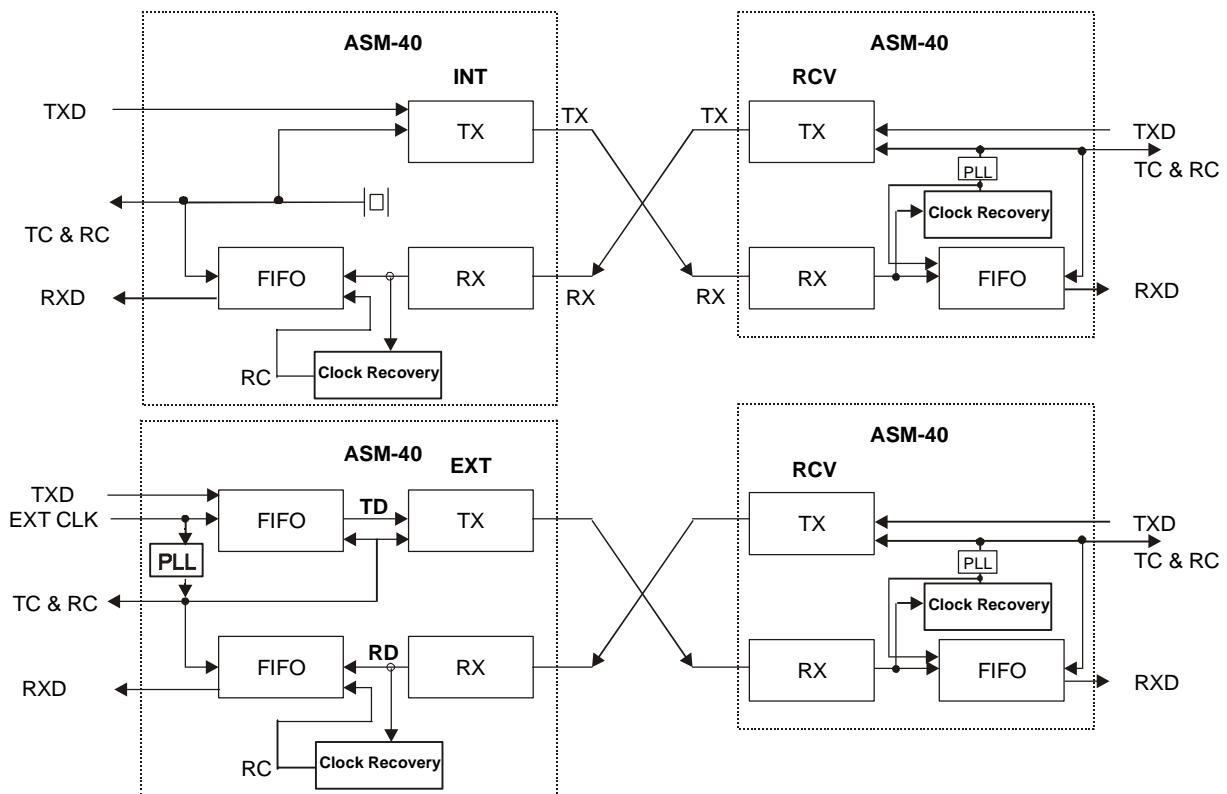
Figure 1-7. Clock Configuration

Management

ASM-40CD is managed by an ASCII terminal or an SNMP management tool via the RS-232 port and the Ethernet port of the LRS-24 common logic card (CM-2). Operation of the module from an ASCII terminal is detailed in *Chapter 3*.

Configurable Parameters

Table 1-2 lists the ASM-40CD parameters that are configurable from an external management tool.

Table 1-2. ASM-40CD Configurable Parameters

Parameter	Function
Data rate	Transmission data rate (in kbps) of the local modem
Clock source	Clock source of the local modem
Loop & BERT	Type of loopback and BERT
LED test	Test of front panel LEDs
Local loopback	Enable/disable local loopback (LLB) from DTE
Remote loopback	Enable/disable remote loopback (RLB) from DTE
Line code	AMI, HDB3, B8ZS
Transmit impedance	120Ω, 100Ω or 75Ω
Carrier control	On, Control
Phantom option	On, Off

Detailed instructions for configuring these parameters from an ASCII terminal are provided in *Chapter 3* and *Appendix D*.

1.4   Technical Specifications

Line Interface

Number of Channels	Two
Type	4-wire unconditioned dedicated line (two twisted pairs)
Coding	User-selectable to HDB3, AMI or B8ZS
Framing	Unframed
Transmit Level	According to G.703
Baud Rates	2048, 1544, 1536, or 1920 kbps
Impedance	For 2048 and 1920 kbps:

- 75Ω, unbalanced
- 120Ω, balanced

1544 and 1536 kbps:

- 100Ω, balanced

Return Loss	Better than 12 dB
Attenuation	Up to 40 dB for approximate range up to 1.75 km (1 mile)
Connector	RJ-45

DTE Interface	*Type*	V.24, V.35, V.36, X.21, RS-530, IR-ETH
	Data Rate	32, 64, 128, 192, 256, 384, 512, 768, 1024, 1536, 1544, 1920 and 2048 kbps
	Interface Modules	• LRSI-F/B-5 – V.24, V.35, V.36, X.21, RS-530 via SCSI-26 female connectors • LRSI-F/B-14 – IR-ETH, IR-ETH/QN via RJ-45 connectors
Timing	*Transmit and Receive*	• Internal – From on-board oscillator • External – From the DTE • Receive – Derived from the receive signal
Indicators	*POWER ((green)*	ON – ASM-40CD is powered
	TD (yellow)	ON – Steady SPACE is transmitted Blinks – Data is transmitted
	RD (yellow)	ON – Steady SPACE is received Blinks – Data is received
	RTS (yellow)	ON – DTE activates Request-to-Send
	DCD (yellow)	ON – A valid receive line signal is present
	SYNC LOS (red)	ON – There is no synchronization between the two modems
	TEST (red)	A test is active
	ERR (red)	ON – The internal BER tester detects an error in the received data or sync loss in BER test
Diagnostics	*Loopbacks*	ITU V.54: • Local analog loopback, activated via terminal, SNMP management tool or by the DTE interface signal • Remote digital loopback, activated via terminal, SNMP management tool or by the DTE interface signal • Local digital loopback, activated via terminal or SNMP management tool
	BERT	Built-in pattern generator and tester activated from terminal, complies with ITU V.52
Physical		Up to 12 ASM-40CD modem cards can be accommodated per LRS-24 hub

Power Supply	*Voltage*	±5V
	Power Consumption	3.5W max.
Environment	*Temperature*	0–50°C / 32–122°F
	Humidity	Up to 90%, non–condensing

Chapter 2

Installation and Operation

This chapter provides information for:

- Installation of the ASM-40CD module
- Installation of the interface module
- Operating the ASM-40CD modem.

Chapter 3 presents information on configuring the system using an ASCII terminal.

If a malfunction appears, refer to *Chapter 4* for troubleshooting.

The information presented in this chapter supplements the general instructions for installation and operation of the LRS-24 hub. Refer to LRS-24 installation and operation manual for further information.

2.1 Introduction

To complete the installation of ASM-40CD, perform the following (in the given order):

1. Install the card into the LRS-24 chassis.
2. Install the interface module into the LRS-24 chassis.
3. Connect the appropriate cable to the interface module.
4. Power the modem up.

⚠️
Warning

No internal settings, adjustment, maintenance, and repairs may be performed by either the operator or the user; such activities may be performed only by a skilled technician who is aware of the hazards involved.

Always observe standard safety precautions during the installation, operation, and maintenance of this product.

2.2 Package Contents

The ASM-40CD package contains:

- ASM-40CD modem card
- Matching interface module

- Splitter cable for connecting an interface module to the appropriate DTE:
  - V.24 – CBL-SCS26/V24
  - RS-530 – CBL-SCS26/RS530
  - V.35 – CBL-SCS26/V35
  - X.21 – CBL-SCS26/X21
  - V.36 – CBL-SCS26/V36
- Last Mile Access and Intelligent Modems CD.

2.3   Installing the ASM-40CD Card

Installing the Card in the Chassis

➤ **To install ASM-40CD into the chassis:**

1. Insert the ASM-40CD card into the assigned I/O slot of the LRS-24 enclosure, as described in the system installation plan (see LRS-24 installation and operation manual).

2. Tighten the screws that secure the ASM-40CD module to the LRS-24 frame, for proper grounding of the module panel. The PCB layout of the ASM-40CD card is shown in *Figure 2-1.*
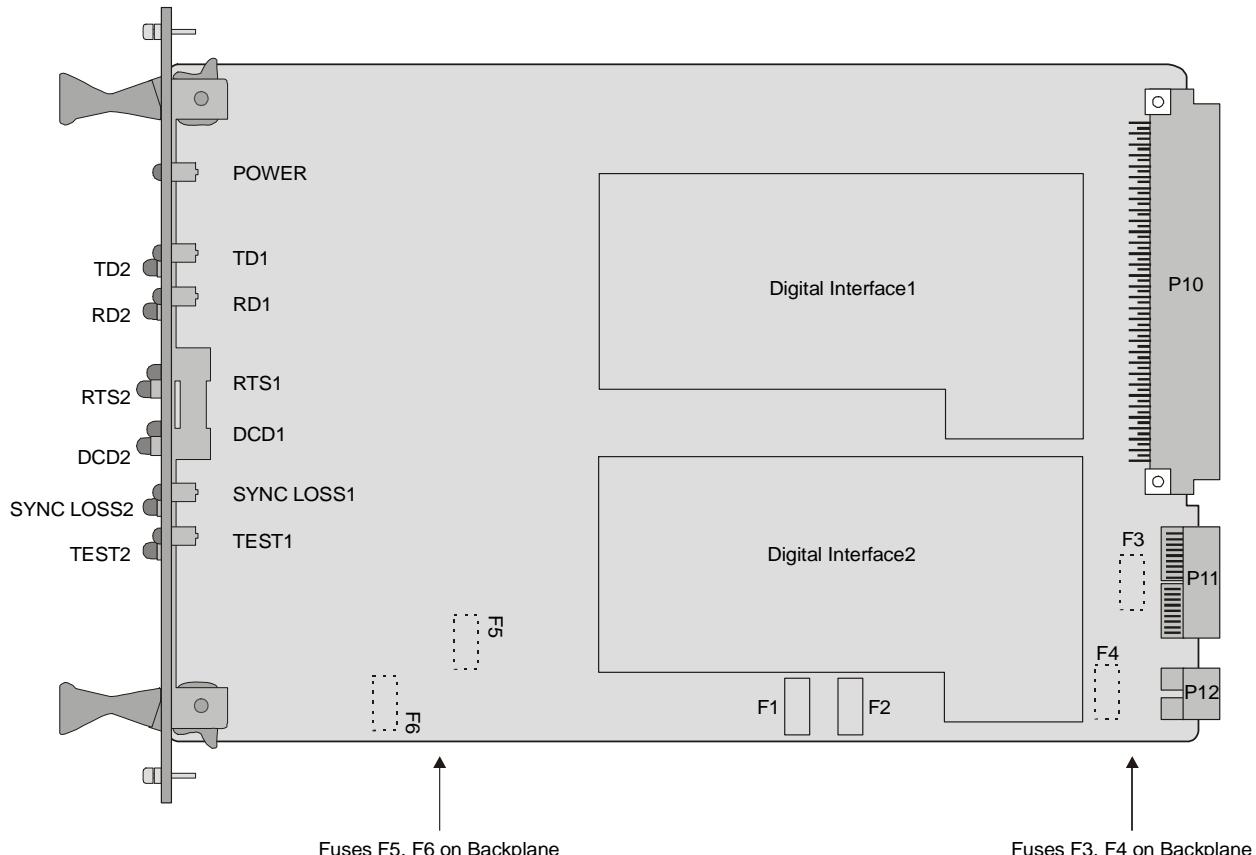
Figure 2-1. Diagram of ASM-40CD PCB

Table 2-1. ASM-40CD Fuses

Fuse	Function
F1, F2	1A for the 135V phantom power supply line
F3	1A for the -5V power supply
F4	1A for the +5V power supply
F5	500 mA for phantom of the modem 1 power supply
F6	500 mA for phantom of the modem 2 power supply

Table 2-2 describes the backplane connectors, shown in *Figure 2-1*.

Table 2-2. Backplane Connectors

Connector	Function	Use
P10	Data	Carrying data and signaling to/from the interface module
P11	Control	Coupling ASM-40CD module to the hub control module
P12	Power	Supplying +5V and –5V from the hub power supply module

2.4   Installing the Interface Module

Interface Module Inspection

Check that the supplied interface module meets the physical and electrical interface requirements of the installation site, according to *Table 2-3.* The interface modules are:

- **LRSI-F-5** – V.24/RS-232 (64 kbps), V.35, X.21, RS-530 and V.36 interfaces (via adapter cables), see *Figure 2-2*.

- **LRSI-F-14** – IR-ETH, IR-ETH/QN, see *Figure 2-3*.

For a more detailed description of the IR-ETH and IR-ETH/QN interface modules, see *Appendix A* and *Appendix B*.

Note   *LRSI-F-xx interface modules are placed in the top section of the LRS-24F chassis; LRSI-B-xx interface modules are placed in the back section of the LRS-24B chassis.*

Table 2-3. Interface Module Connections for ASM-40CD

Interface Module	ITU-T	DCE Connector	Line Connector	RAD DTE Cable
LRSI-F-5	V.35	2 × SCSI-26, female	2 × RJ-45	CBL-SCS26/V35
	V.36			CBL-SCS26/V36
	RS-530			CBL-SCS26/RS530
	V.24			CBL-SCS26/V24
	X.21			CBL-SCS26/X21
LRSI-F-14	IR-ETH	2 × RJ-45	2 × RJ-45	
	IR-ETH/QN			
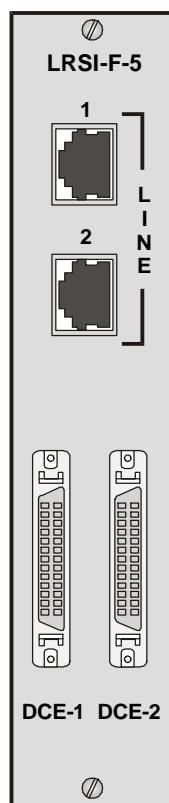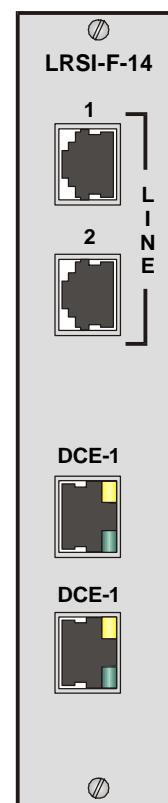
Figure 2-2. LRSI-F-5   Figure 2-3. LRSI-F-14

Setting Internal Jumpers

The DTE1 and DTE2 jumpers serve for selection of the serial interface type
(see *Figure 2-4*).
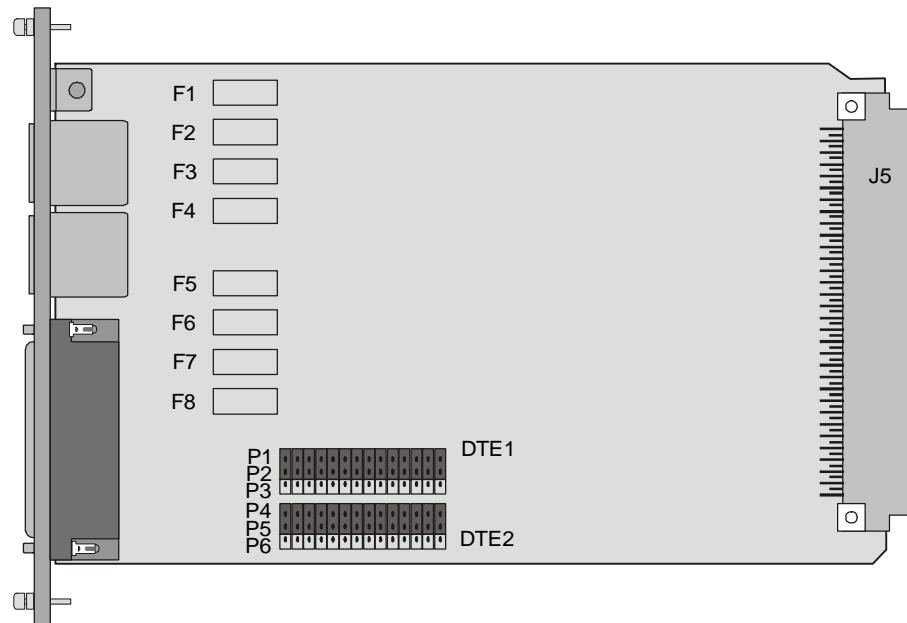
Figure 2-4. Interface Module LRSI-F-5 Jumpers and Fuses

➤ **To select the serial interface type:**

- V.24, X.21, RS-530 and V.36 – Set the DTE1 and DTE2 jumpers over the P1
  and P2 pins.

- V.35 – Set the DTE1 and DTE2 jumpers over the P2 and P3 pins.

Installing the Interface Module into the Chassis

➤ **To install the interface module in the LRS-24 chassis:**

1. Insert the interface module into the upper section above the ASM-40CD
    module of the LRS-24F chassis, or back section of the LRS-24B chassis.

2. Fasten two front panel screws to secure the module to the LRS-24 frame for
    proper grounding.

2.5   Interfaces and Connections

The ASM-40CD modem is connected to the line and DTE via the interface module.
Identify the necessary cables for the interface module you have installed and
prepare the line and DCE cables.

Use *Table 2-4* to prepare the line cable.

Connecting the Line and DTE

➤ **To connect the line and DCE cables to the interface module:**

1. Connect the line and DCE cables to the appropriate interface module connectors.

2. Use the side screws of the DCE cable connector to fasten the cable to the interface module DCE connector.

Table 2-4. RJ-45 Line Connector Pinout

Pin	ID	Function	Direction
1	TTIP	Transmit TIP rail	Output
2	TRING	Transmit RING rail	Output
4	RTIP	Receive TIP rail	Input
5	RRING	Receive RING rail	Input
3, 6, 7, 8	–	–	–

2.6   Operating the ASM-40CD

Front Panel Indicators

Figure 2-5 shows the front panel LEDs of the ASM-40CD module. *Table 2-5* lists the functions of the indicators located on the ASM-40CD front panel.

Table 2-5. ASM-40CD LEDs

ID	Color	State	Indication
POWER	Green	On	Power is On
		Off	Power is Off
TD	Yellow	On	Steady SPACE is transmitted
		Blinks	Data is transmitted
RD	Yellow	On	Steady SPACE is received
		Blinks	Data is received
RTS	Yellow	On	The Request-To-Send signal is sent from the DTE
DCD	Yellow	On	A valid signal exists on the receive line
SYNC LOSS	Red	On	Loss of synchronization
		Off	Synchronization has been achieved
TEST	Red	On	A loopback mode is set or an internal BERT is activated
ERR	Red	On	An alarm is initiated or sync loss in BER tests
		Blinks	An error is detected in BER tests
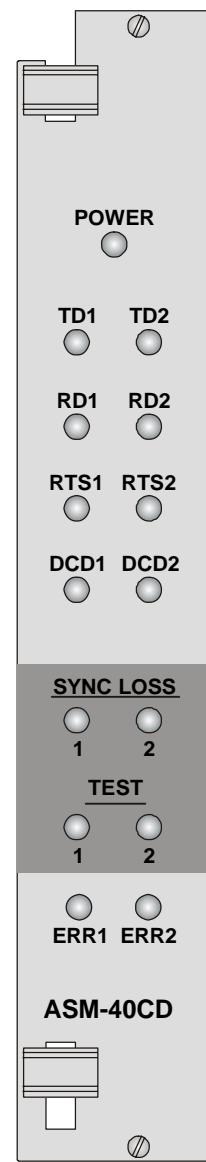
Figure 2-5. ASM-40CD LEDs

Powering ASM-40CD Up

➤ **To power ASM-40CD up:**

- Turn on the LRS-24 modem racks on both sides of the line.

  After power-up, all LEDs are lit up for 3 seconds while the CPU initiates the ASM-40CD module.

  After synchronization between the two modems has been achieved, the ASM-40CD module assumes the normal state according to the LED indications in *Table 2-6*.

Normal Operation

After power-up the LEDs should assume the states as shown in *Table 2-6*. For other LED indications, see *Table 2-5*.

Table 2-6. Normal LED Indications

ID	Color	State	Notes
POWER	Green	ON	ASM-40CD is powered-up
TD	Yellow	–	TD LED state depends on local DTE transmission
RD	Yellow	–	RD LED depends on remote DTE transmission
RTS	Yellow	–	Indicates RTS from DTE
DCD	Yellow	ON	Indicates signal detection on the line
SYNC LOSS	Red	–	Loss of synchronization
TEST	Red	OFF	
ERR	Red	OFF	If ERR LED is ON – check alarm buffer to determine problem

Chapter 3

Configuration

This chapter describes how to configure the ASM-40CD modem installed in the LRS-24 hub using an ASCII terminal. It includes sections on:

- Initiating an ASCII terminal session
- Entering commands
- Configuring the modem.

3.1   Introduction

The terminal is used to configure, monitor and perform diagnostic tests for the LRS-24 hub and modems installed in it. Specific screens are used for each of these management operations.

The ASCII terminal operations for the LRS-24 hub are described in the LRS-24 installation and operation manual. That manual provides instructions for:

- Accessing various terminal screens
- Entering control parameter options
- LRS-24 management operations.

The LRS-24 management screens available through the ASCII terminal handle the hub functions for:

- IP management network
- LRS-24 chassis status.

The LRS-24 hub screens also provide information on modems installed in the chassis and their alarm status (see *Table 3-1*).

Note

For SNMP RADview operation, refer to RADview User's manual.

Table 3-1. LRS-24 Screens

Screen	Indication
LRS-24 cards	Indicate slot number in which the modem is installed, and the type of SNMP management associated with the module, via either on-board agent (SMOD) or CM-2 agent (IMOD). The ASM-40CD module is IMOD type.
Hub alarm	Indicates whether a modem alarm is active or not. The active alarm associated with a specific modem is shown in the MODEM ALARMS STATUS screen. For details regarding the ASM-40CD alarms, see *Alarm Buffer* and *Using Alarm Messages* in *Chapter 4*.
Hub log file	Indicates time and data of events, such as modem removal from or insertion to the hub.

3.2   Initiating an ASCII Terminal Session

➤ **To enable an ASCII terminal session:**

1. Connect the terminal to the CM-2 RS-232 connector of the LRS-24 hub.

2. Power-up the CM-2 module.

    The opening screen shown in *Figure 3-1* appears followed by the **Cm2›** prompt.

```
    L      RRRR    SSS          222    4    4
    L      R  R   S            2   2   4    4
    L      RRRR    SS    ----      2     444444
    L      R  R        S            2          4
    LLLL   R   R    SSS          22222      4


          RAD DATA COMMUNICATIONS
```
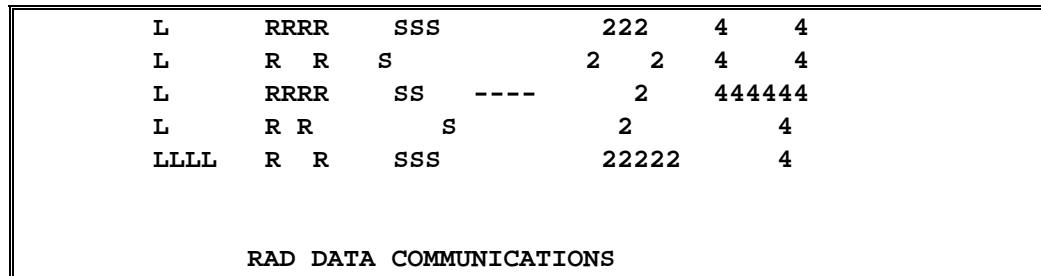
Figure 3-1. LRS-24 Terminal Session Opening Screen

3.3   Entering Commands

The commands listed in *Table 3-2* enable you to access ASM-40CD screens. After the **CM-2›** prompt appears, type one of these commands to to view the desired screen. In the command phrases indicated below, *nn* denotes the number of the slot in which the ASM-40CD module is installed, where nn = 1 through 12.

Table 3-2. Screen Access Commands

Command	Function
NODEnn DEF OPR	Setting operational parameters. This screen is needed to switch control or to load configurable parameters from one modem to the other.
NODEnn DEF PRM	Setting data rate and timing of both modems
NODEnn DSP STT	Viewing types of both digital and fiber optic interfaces and LED indications
NODEnn DEF TST	Invoking loopback connections, BER tests, and LED test
NODEnn DSP ALT	Viewing modem alarm messages and status
NODEnn DSP LOG	Viewing list of timed events for the modem

See *Appendix D* for a further explanation of the ASM-40CD commands.

Parameters shown on the ASM-40CD screens are of the **read** or **write** type.

Navigating the Menu

The operator can change **write** parameters to using the keys described in *Table 3-3*.

Table 3-3. Keys to Change Screen Write Parameters

Key	Action
‹Tab›	Moving from field to field. Pressing ‹**Tab**› in the last field brings the cursor back to the first field on the screen
‹**F**› or ‹**U**›	Viewing the next parameter option in the list
‹**B**› or ‹**D**›	Viewing the previous parameter option in the list
‹**Enter**›	Saving selected parameter options and exit the screen
‹**Esc**›	Exiting the screen without saving selected parameter options

3.4   Default Factory Settings

The factory settings are listed in *Table 3-4*.

Table 3-4. Default Factory Settings

Parameter	Factory Setting
Data Rate	256 kbps
Clock Source	INT–RCV
Input Impedance	120
Carrier Control	On
Line Coding	HDB3
Loop & BERT	Cancel
Local Loopback	Disable
Remote Loopback	Disable
Remote Dig Enable	Off

3.5   Configuring the Modem

You can configure the modem for your specific application.

➤ **To configure the modem:**

1. Type: `NODEnn DEF PRM`‹Enter›.

    The Modem Setup menu appears.

2. Move the cursor to the **Select Modem** field by pressing ‹**Tab**› and select the local modem that you intend to configure by pressing ‹**F**› or ‹**B**›.

3. Move the cursor to the **DATA RATE** field by pressing ‹**Tab**› and select the desired transmission rate.

4. Move the cursor to the **CLOCK SOURCE** field by pressing ‹**Tab**› and select the clock source for the local and remote modems.

5. Move the cursor to the **INPUT IMPEDANCE** field by pressing ‹**Tab**› and select the line impedance for the E1 line (if applicable).

Note   *If you choose 75Ω, the Impedance (input and output) will be 75Ω; however, for an unbalanced connection, use an adapter cable (UTP for unbalanced). The adapter cable is not supplied by RAD.*

6. Move the cursor to the **LINE CODING** field by pressing ‹**Tab**› and select the G.703 line coding.

Refer to *Appendix D* for further information on commands.

Chapter 4

Troubleshooting and Diagnostics

This chapter discusses:

- Types of loopback tests

- Internal BERT operation

- Setting loopback, BER, and LED tests

- Viewing alarm status

- Viewing alarm buffer messages

- Troubleshooting.

All diagnostics options can be implemented from an ASCII terminal or from an SNMP management tool. The LLB and REM loopbacks can also be initiated from the DTE via dedicated pins of the DCE connector. These diagnostic approaches can also be used in combination. For example, the BERT circuit test pattern can be run on a path determined by one of the loopback connections and then examine the alarm buffer messages for any transmission error or configuration mismatch.

4.1 Loopback Tests

Three loopback connections apply to a transmission system consisting of an ASM-40CD local module and an ASM-40 remote unit.

- **Local analog loopback** – The analog transmit signal from the local unit transmitter is looped back to the local unit receiver. The loopback tests the local ASM-40CD modem, the local DTE and the connections between them. The loopback is set from the local DTE via the LLB control line (see *Figure 4-1*).

- **Local digital loopback** – The digital receive signal is looped back in the local ASM-40CD towards the line. The loopback tests the local ASM-40CD, the remote DTE and the line between them (see *Figure 4-3)*.

- **Remote digital loopback** – The digital receive signal is looped back in the remote ASM-40 towards the line. The loopback tests the local ASM-40CD, the remote ASM-40 and the line between them. The loopback is set from the local ASM-40CD or from the local DTE via the RLB control line (see *Figure 4-2)*.

While a loopback connection is set, the TEST LED is lit up on the front panel of both local and remote units.

Activating Loopback Tests

V.54 loopback connections are set from:

- An ASCII terminal or from an SNMP management tool
- Local or remote DTE (except for the X.21 and Ethernet digital interfaces).

For V.54 loopback settings using an ASCII terminal connected to the local unit, refer to *Section 4.3.*

Running Loopback Tests

➤ **To run a loopback test:**

- Configure the modem to enable tests (see *Section 4.3*).
  Check any alarms and alarm messages (see *Section 4.4*).

Loopback tests are best performed in the order presented here.

For details on troubleshooting ASM-40CD malfunctions using loopback tests, see *Using Loopbacks for Troubleshooting.*

Before running the loopback tests:

- Verify that the data terminal is operating properly and can be used for a test.
- Do not perform tests with faulty equipment.

Ensure that all units are powered on and are configured correctly.

Local Analog Loopback (LLB)

The local analog loopback (LLB) checks the performance of the local ASM-40CD modem, the local data terminal, and the connections between them (see *Figure 4-1*).

LLB is activated from the DTE, RADview, or an ASCII terminal. When LLB is initiated, the TEST LED lights up.
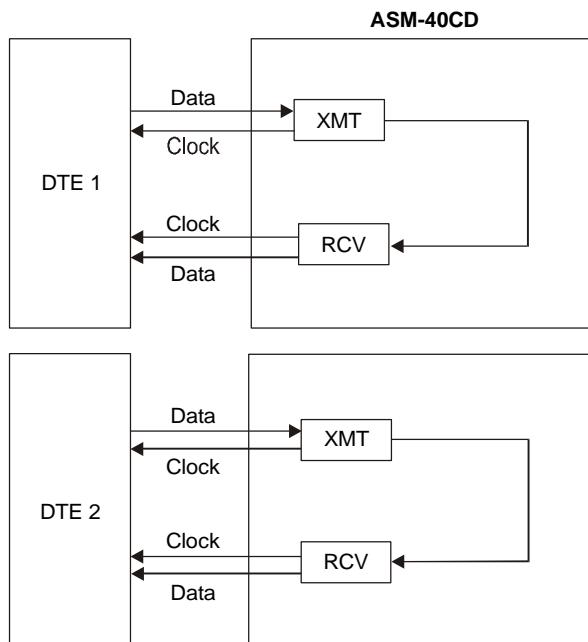
Figure 4-1. ASM-40CD Local Analog Loopback (LLB)

After testing the DTE connection, repeat the LLB test using BERT equipment. If the BER test indicates an error-free data stream, but the test using DTE indicates a fault, verify that the cable between the DTE and ASM-40CD is correctly connected. If the problem persists follow the DTE manufacturer's test procedures.

To pinpoint a line problem, perform the LLB loopback at the opposite end. If both LLB tests are error-free, the fault is in the line that is part of the LRSI-F-XX interface modules.

After completing the test or correcting the fault, deactivate the LLB loopback.

Remote Digital Loopback (RLB)

The remote digital loopback (RLB) tests the performance of each local ASM-40CD modem with its respective remote ASM-40 unit, as well as the line link. The remote digital loopback sets a loop at the remote ASM-40 modem from the terminal coupled to the local unit.
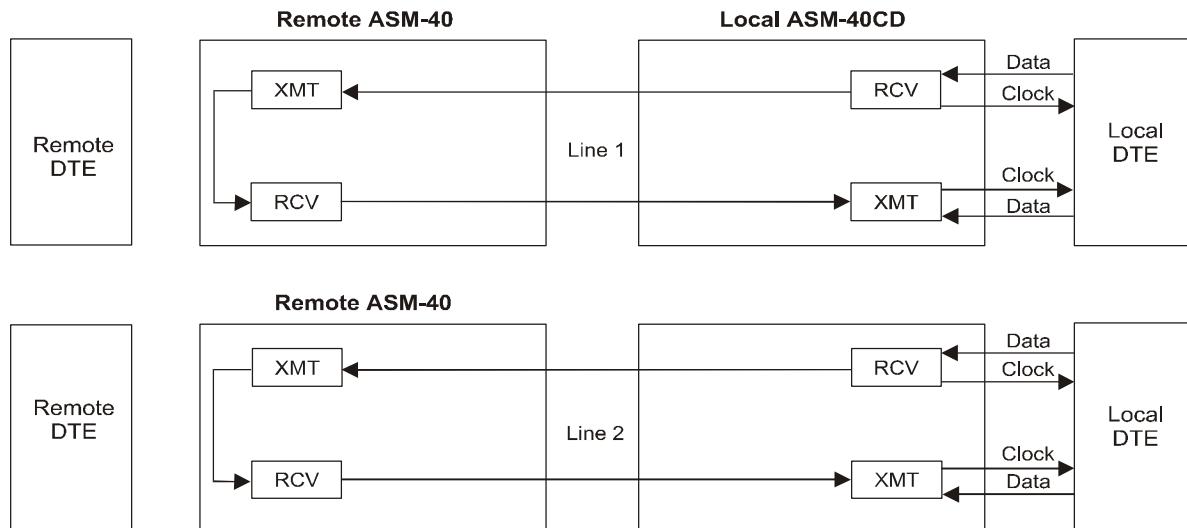
Figure 4-2. ASM-40CD Remote Digital Loopback (RLB)

RLB is activated from a local DTE, RADview, or an ASCII terminal. When running this test the TEST LED on the front panel of both the local and remote units is lit up.

If the RLB test indicates a fault, but the LLB was successful for both local and remote modems, then the line or G.703 interface on either side of the line is not functioning properly.

Local Digital Loopback (DIG)

Local digital loopback test (DIG) determines the performance of both local ASM-40CD and remote ASM-40, as well as the line link. The DIG loopback sets a loop at the local modem from the terminal that is completed through the remote unit (see *Figure 4-3*). The local digital loopback path is similar to that of the remote digital loopback initiated from the remote unit.

DIG is activated either from RADview or an ASCII terminal. When running this test the TEST LED on the front panel of the local unit is lit up.
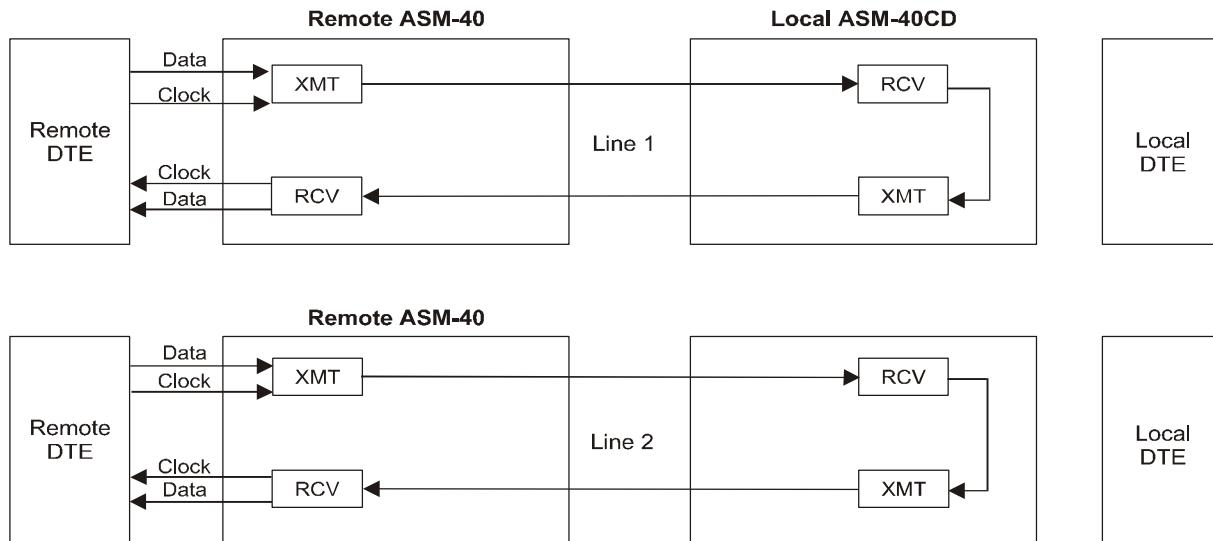
Figure 4-3. ASM-40CD Local Digital Loopback (DIG)

4.2   Internal BERT Circuit Operation

ASM-40CD has a built-in BERT circuit consisting of a pattern generator and a pattern tester. This circuit acts in conjunction with the V.54 diagnostic loops and remote BERT to verify normal system operation and isolate faulty equipment in the event of system failure. Each of the modems on the card has a separate BERT circuit.

Activating the BER tester simultaneously activates the pattern generator, which sends a 511-bit pattern according to the ITU V.52 standard.

If errors are detected by the BER tester, the ERR LED flashes or remains ON. *Figure 4-4* shows the data flow from the pattern generator to the pattern tester in the local BERT circuit.
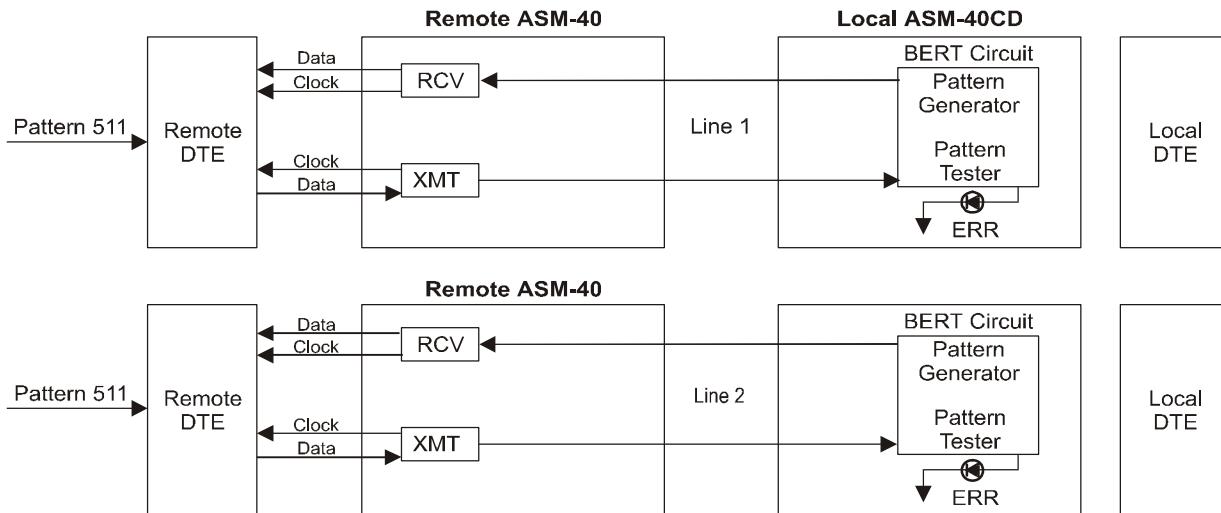
Figure 4-4. ASM-40CD BER System Test

4.3   Setting Loopback and BER Tests

The Modem Diagnostic menu (*Figure 4-5*) provides information on diagnostic options and enables you to set loopback connections and to test the BER. The BER can be evaluated over a portion or the entire transmission system, using either the built-in BERT circuit or external equipment.

➤ **To initiate a loopback and BERT:**

- Type: **NODEnn DEF TST ‹Enter›.**

  The Modem Diagnostic menu appears (see *Figure 4-5*).

Note

nn is slot number, from 1 to 12.

```
MODEM DIAGNOSTIC
                    MODEM NAME     : ASM-40CD(m)
DEFINE MODEM PORT NUMBER     : 1
MODEM STATUS                 : MASTER PERMANENT
SELECT MODEM                 : MODEM 1 LOCAL
LOOP & BERT                  : CANCEL    LOOP TIMEOUT: N/A
REMOTE DIG ENABLE            : ENABLE
BERT RESULTS                 : 0.0 E- 00
LED TEST                     : OFF
LOCAL LOOP BACK              : DISABLE
REMOTE LOOP BACK             : DISABLE
REMOTE DIG                   : OFF
ENABLE TEST FROM REM MODEM   : N/A
BERT ERR INJECTION           : N/A
```

Figure 4-5. Modem Diagnostic Screen

Bolded rows in *Figure 4-5* indicate fields applicable to ASM-40CD and standalone modems. Additional, non-bolded parameters listed on a screen apply to other modems installed in the LRS-24 hub (see *Table 4-1*).

Note

*Running a test automatically cancels a previous set of tests. For details regarding loopback definitions and BER tests, refer to *Section 4.1* and *Section 4.2* respectively.*

Table 4-1. Modem Diagnostic Menu Parameters

Parameter	Type	Function	Option	Option Indicates:
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified	ASM-40CD(M)	Master ASM-40CD
MODEM STATUS	Read	Checking whether loopback and BER tests can be invoked from this screen	Master Permanent	Modem controls its own test routines, which can be invoked from this screen
SELECT MODEM	Write	Selecting the test transmission path in conjunction with one of the loopback fields	Modem 1 Local Modem 2 Local	Loopback connection is set relative to modem 1 or 2 of the card installed in the LRS-24 hub
LOOP & BERT	Write	Activating a specific loopback or BER testing	ANA	Local loopback is set in the local unit
			REM	Remote loopback is set in the remote unit
			ANA+ BERT	Local loopback is set in the local unit and enable the pattern generator and the pattern tester of the built-in BERT circuit
			REM+ BERT	Remote loopback is set in the remote unit and enables the built-in BERT circuit

Parameter	Type	Function	Option	Option Indicates:
			BERT	Built-in BERT circuit is enabled. For BER testing, a 511-bit pattern generator must also be enabled in the remote DTE
			CANCEL	Cancellation of one of the tests, set above
			DIG	Local digital loopback is set in local modem
REMOTE DIG ENABLE	Read		REMOTE DIG	Local DIG from the remote modem
BERT RESULTS	Read	Viewing the BER results for one of the tests performed by the built-in BERT circuit	0.0E-0 to 9.9E-9	BER test result
LED TEST	Write	Testing front LEDs of ASM-40CD or standalone modem	ON	LEDs are turned on for a few seconds
			OFF	LEDs are not tested
REMOTE LOOPBACK	Write	Enables remote loopback activation from the DTE	ENABLE	Enables remote loopback (RLB), from the DTE
			DISABLE	Disables DTE RLB signal
LOCAL LOOPBACK	Write	Enables local loopback activation from the DTE	ENABLE	Enables local loopback (LLB), from the DTE
			DISABLE	Disables DTE LLB signal
REMOTE DIG	Write	Enables reception of the local digital loopback activation patern from remote modem, when it activates a remote digital loopback	ON	ASM-40CD activates a local digital loopback when remote modem initiates remote digital loopback
			OFF	ASM-40CD does not activate a local digital loopback when remote modem initiates remote digital loopback

4.4   Viewing Alarm Status

The Modem Alarm Status screen (*Figure 4-6*) enables viewing messages stored in the Alarm Buffer of the ASM-40CD and remote modems. The screen also shows synchronization loss and DTE loopback signaling states.

➤ **To view the Alarm Status:**

• Type: **NODEnn DSP ALT**<Enter>.

   The screen shown in *Figure 4-6* appears.

```
MODEM ALARM STATUS
                          MODEM NAME  : ASM40CD(m)
DEFINE MODEM PORT NUMBER            : 1
SELECT MODEM                        : MODEM 1 LOCAL
LINE DISCONNECT                     : OFF
REMOTE MODEM POWER OFF              : OFF
TRANSMIT CARRIER                    : OFF
RECEIVE CARRIER                     : OFF
LLB BY DTE                          : OFF
RLB BY DTE                          : OFF
SYNC LOSS                           : ON
CONFIGURATION MISMATCH              : OFF
NVRAM FAILED                        : OFF
ILLEGAL EXTERNAL CLOCK SOURCE       : OFF
NO MANAGEMENT LINK                  : ON
NO MODEM PORT (IR)                  : ON       LAN NOT CONNECTED   : OFF
NO FIBER INTERFACE                  : OFF      NO EXT CLK INPUT    : OFF
IR RATE MISMATCH                    : OFF      ILL. CLK-ERR        : OFF
SELF TEST FAILED                    : OFF      OLD REM VERSION     : OFF
XILINX FAILED                       : OFF      WRONG CONNECTION    : OFF
MINOR ALARM  - AIS-ELEC             : OFF      AIS-OPT             : OFF
MAJOR ALARM - LINE DISCON.-ELEC     : OFF      LINE DISCON.-OPT    : OFF
```

Figure 4-6. Modem Alarm Status Screen

Bolded rows in *Figure 4-6* indicate fields applicable to ASM-40CD and standalone modems. Additional, non-bolded parameters listed on a screen apply to other modems installed in the LRS-24 hub.

The function and options available for each highlighted parameter or alarm message are summarized in *Table 4-2.*

Table 4-2. Modem Alarm Status Screen

Parameter	Type	Function	Option	Option indicates
LLB BY DTE	Read	LLB comand was issued by DTE	Modem 1 Local Modem 2 Local	LLB
RLB BY DTE	Read	RLB comand was issued by DTE	Modem 1 Local Modem 2 Local	RLB
SYNC LOSS	Read	Viewing the alarm state	ON	Modems are not locked
			OFF	Modems are locked
NVRAM FAILED	Read	Viewing the alarm state	ON	A non-volatile RAM failure was detected. The NVRAM contains the system configuration.
			OFF	No NVRAM failure was detected

Parameter	Type	Function	Option	Option indicates
ILLEGAL EXTERNAL CLOCK SOURCE	Read	Viewing the alarm state	ON	Rate of external clock detected by the modem is not supported, or there is no external clock
			OFF	No failure as mentioned above is detected.
NO MANAGEMENT LINK	Read	View the alarm state.	ON	Management channel between the modems is not active.
			OFF	No failure as mentioned above is detected.
NO MODEM PORT (IR)	Read	Viewing the alarm state	ON	Digital interface card is not installed on ASM-40CD, or the installed module is not applicable.
			OFF	Warning has not been activated
XILINX FAILED	Read	Viewing the alarm state	ON	FPGA has been loaded incorrectly
			OFF	Warning has not been activated

The information presented on the Modem Alarms Status screen is valid only if the Stop Status Update parameter in the Modem Advanced Setup screen is set to DISABLE. If this parameter is set to ENABLE, it will prevent ASM-40CD alarm states from being reported to the CM-2.

4.5   Viewing Alarm Buffer Messages

The ASM-40CD alarm buffer stores system alarm records, which can be viewed on either an ASCII terminal or an SNMP management tool. When one or more alarm records appear in the buffer, the front panel ERR LED turns ON. After the alarm buffer is cleared, the ERR LED is reset to OFF. *Table 4-3* lists the types of messages that can be stored in the ASM-40CD alarm buffer.

Table 4-3. ASM-40CD Alarm Messages

Alarm Message	Indicates
SYNC LOSS	Line is disconnected
NO MANAGEMENT	Management channel is not available
FPGA FAILED	ASM-40CD data processor has been incorrectly loaded
NVRAM FAILED	Modem non-volatile RAM failed
NO MODEM PORT (IR)	Modem does not detect the digital interface
ILLEGAL EXTERNAL CLOCK	Detected clock rate is not supported by the modem

4.6   Troubleshooting

ASM-40CD is designed to facilitate identifying and correcting system failures that preclude normal modem operation. This section lists some possible failures in ASM-40CD function, and describes their symptoms and the required corrective actions.

Using LEDs

Many malfunctions or system failures can be detected through changes in the state of the ASM-40CD front panel LEDs (described in *Chapter 2*). *Table 4-4* lists changes in the status of some LEDs that indicate malfunctions, and the appropriate corrective actions.

Table 4-4. Troubleshooting Using LEDs

Symptom	Malfunction	Corrective Action
Power LED is Off	Blown fuse, +5V or -5V	Replace the blown fuse
SYNC LOSS LED is On Modem is not locked DCD LED is Off	Line connection between modems	Check line and line connection between modems
TX LED is Off Modems are locked (no information transfer)	Modem to DTE connection	Check connection between modem and DTE
ERR LED is On	See *Table 4-5*	–

Using Alarm Messages

Some ASM-40CD malfunctions can be detected from a combination of alarm messages and changes in the state of the front panel LEDs. *Table 4-5* details a number of alarm messages associated with ERR LEDs that indicate different sources for system failures and the required corrective actions.

Table 4-5. Troubleshooting Using Alarm Messages

Symptom – ERR LED is On	Basis for Malfunction	Corrective Action
SYNC LOSS alarm is stored in the Alarm Buffer	The line between the modems is not properly connected	Verify and connect the line properly Verify that the remote modem works with the same bit rate Verify that the CARR is On or RTS is On
NVRAM FAILED alarm is stored in the Alarm Buffer	Hardware failure	Replace the unit
INTERFACE alarm is stored in the Alarm Buffer	No digital interface, or a digital interface which is not supported by modem	Connect a DTE interface which is supported by the modem
ILLEGAL EXT CLK alarm is stored in the Alarm Buffer	There is no external clock, or the external clock frequency is not supported by the modem	Verify that an external clock is connected to the modem and its frequency is supported by the modem
XILINX FAILED alarm is stored in the Alarm Buffer	ASM-40CD hardware failure	Replace the unit

Using Loopbacks for Troubleshooting

To solve a system transmission problem, set V.54 loopback connections and check Alarm Buffer messages (see *Section 4.5*) in the sequence shown in *Figure 4-7, Figure 4-8,* and *Figure 4-9*. Loopback tests are described in *Section 4.1*.

After completing the test or correcting the fault, deactivate the loopback. Notice that the TEST LED turns off. Deactivate a loopback before setting another loopback.

```
                           ┌──────────┐
                          (   Start    )
                           └────┬─────┘
                                │
                                ▼
                      ┌──────────────────┐
                      │ Set local ASM-40CD│◄──────────────────────────┐
                      │    to LLB         │                           │
                      └────────┬─────────┘                           │
                               │                                      │
                               ▼                                      │
                          ◇─────────◇        Yes      ┌─────────┐    │
                         ◇   OK?     ◇───────────────►│    1    │    │
                          ◇─────────◇                 └─────────┘    │
                               │ No                                   │
                               ▼                                      │
                        ◇──────────────◇    Yes    ┌──────────────┐  │
                       ◇ Local modem    ◇─────────►│ Install a legal│─┤
                       ◇ 'No Interface'  ◇         │ digital interface│ │
                       ◇  alarm On?      ◇         │     card      │  │
                        ◇──────────────◇           └──────────────┘  │
                               │ No                                   │
                               ▼                                      │
                        ◇──────────────◇    No     ┌──────────────┐  │
                       ◇ Local DTE      ◇─────────►│ Repair DTE-modem│─┤
                       ◇ to modem connection◇      │   connection  │  │
                       ◇     OK?        ◇          └──────────────┘  │
                        ◇──────────────◇                             │
                               │ Yes                                  │
                               ▼                                      │
                        ◇──────────────◇    No     ┌──────────────┐  │
                       ◇ Local DTE      ◇─────────►│ Match DTE and │─┤
                       ◇ and modem clock ◇         │ modem clock   │  │
                       ◇ types match?    ◇         │    types      │  │
                        ◇──────────────◇           └──────────────┘  │
                               │ Yes                                  │
                               ▼                                      │
                      ┌──────────────────┐                           │
                      │ Set local ASM-40CD│                           │
                      │  to LLB + BERT    │                           │
                      └────────┬─────────┘                           │
                               │                                      │
                               ▼                                      │
                        ◇──────────────◇    Yes    ┌──────────────┐  │
                       ◇    OK?         ◇─────────►│ Failure in local│─┤
                        ◇──────────────◇          │ digital interface.│ │
                               │ No               │  Repair/replace │  │
                               ▼                  │ digital interface.│ │
                      ┌──────────────────┐        └──────────────┘  │
                      │   Failure in      │                           │
                      │  local modem.     │───────────────────────────┘
                      │ Repair/replace modem.│
                      └──────────────────┘
```

*Figure 4-7. Troubleshooting Flowchart using V.54 Loopbacks*
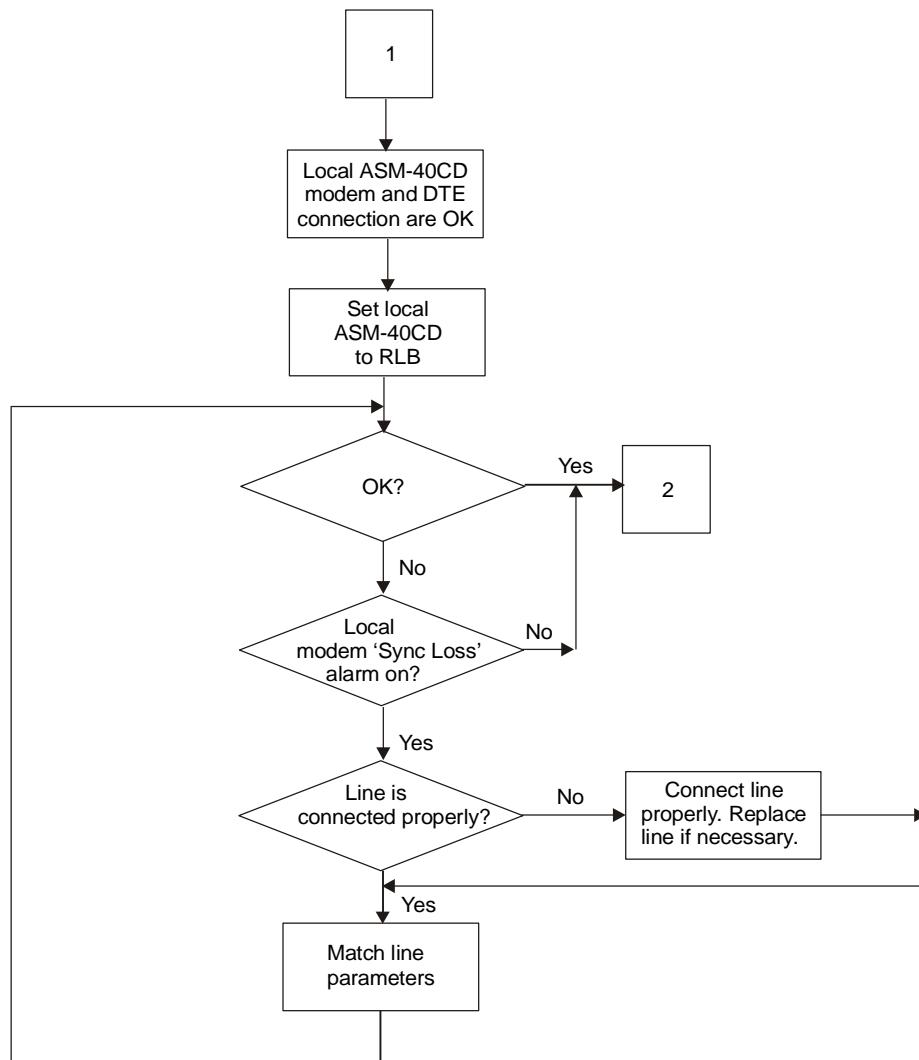
Figure 4-8. Troubleshooting Flowchart Using V.54 Loopbacks (Cont.)

Note   *Parameters in the remote ASM-40 are changed manually via internal switches and jumpers.*
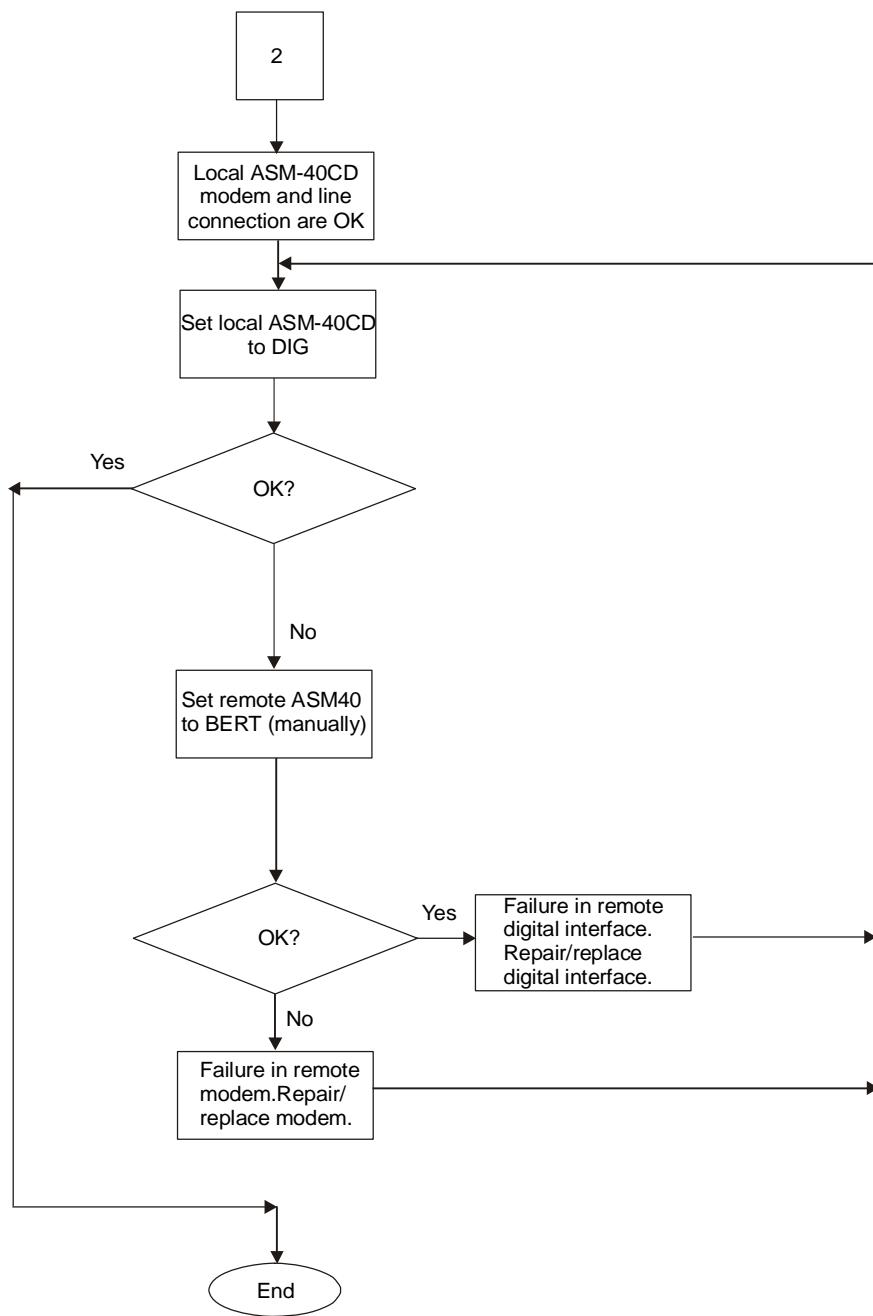
*Figure 4-9. Troubleshooting Flowchart Using V.54 Loopbacks (Cont.)*

Appendix A

IR-ETH Ethernet Card

A.1   Introduction

The IR-ETH Ethernet card is a bridge that converts Ethernet electrical levels to TTL levels and Ethernet protocol to HDLC protocol. It provides long distance transmission and avoids the Ethernet collision limitation. It is mounted on the ASM-40CD modem module, installed in the LRS-24 hub.

Typical Application

A typical application of the ASM-40CD module, on which the IR-ETH Ethernet card is mounted, is shown in *Figure A-1.* The LAN connection is made by using the LRSI-F-14 Interface module installed in the upper section of the LRS-24F chassis, or LRSI-B-14 installed in the back section of the LRS-24B chassis.
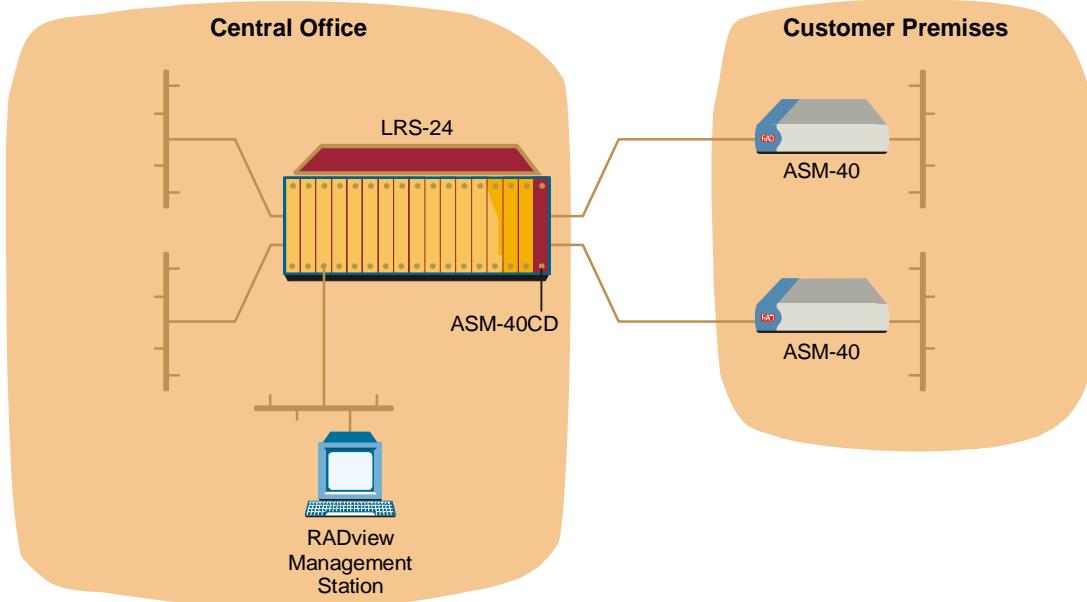

Figure A-1. Typical Application of ASM-40CD with IR-ETH

Physical Description

Figure A-2 shows the IR-ETH Ethernet card. Four connectors are provided to connect the Ethernet card to the top of the main module card. The IR-ETH card contains a LED and 4-section DIP switch.
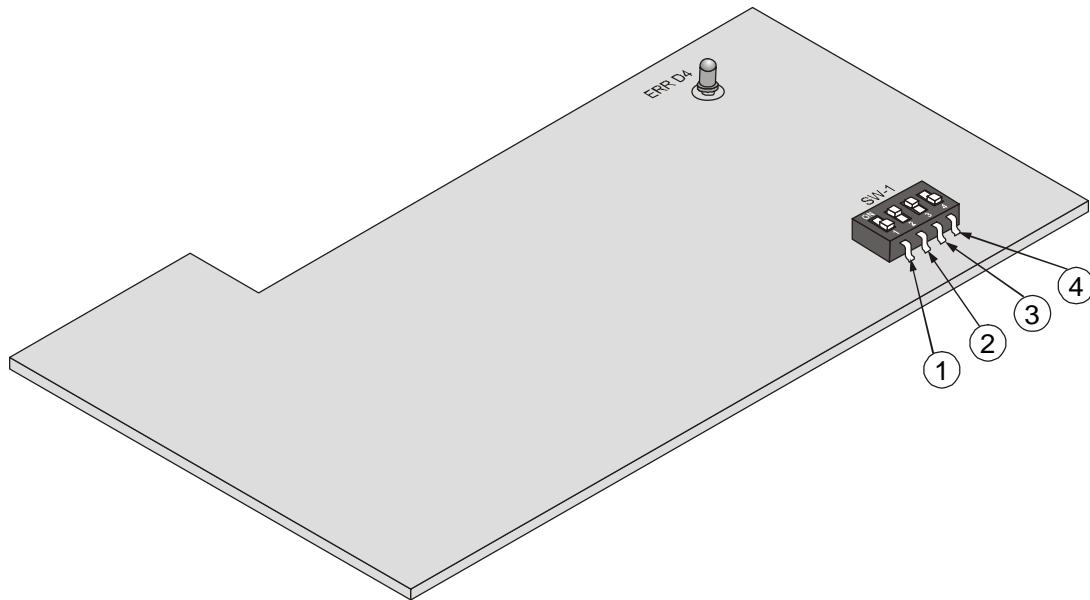

Figure A-2. Location of DIP Switch and ERR LED on IR-ETH Ethernet Card

A.2   Technical Specifications

General	*LAN Table*	10,000 addresses
	Filtering and Forwarding	15,000 pps
	Buffer	256 frames
	Delay	1 frame
LAN	*Standard*	Conforms to IEEE 802.3/Ethernet
	Data Rate	10 Mbps (20 Mbps 10BaseT FDX)
WAN	*Protocol*	HDLC
	Data Rate	According to the modem transmission rate
	Connector	RJ-45

A.3   Installation and Operation

This section describes:

- Setting the IR-ETH DIP switch

- Installing the IR-ETH board on the ASM-40CD modem

- Installing LRSI-F-14 interface module.

Configuring IR-ETH

Configure the IR-ETH module by setting the DIP switch in accordance with *Table A-1*.

Table A-1. DIP Switch Settings

Number	Switch	Description	Default Setting
1	SQ/FD	ON Ethernet bridge operates in full duplex mode OFFEthernet bridge operates in half duplex mode	OFF
2	CMP	ON Strips padding bits inserted in 64-byte frame OFFTransmits frames over WAN as is	ON
3	FIL	ON Passes only frames destined for another LAN OFF Disables LAN filter; passes all frames transparently	OFF
4	–	Permanently set to OFF	

Caution   The ASM-40CD and IR-ETH cards contain components sensitive to electrostatic discharge (ESD). To prevent ESD damage, do not touch the module components or connectors.

Installing the IR-ETH Card

➤ **To install the IR-ETH card:**

1. Set the DIP switch on the IR-ETH Ethernet card according to *Table A-1*.

2. Press the IR-ETH Ethernet card (with connectors facing down) against the ASM-40CD module connectors.

3. Fasten IR-ETH to the modem.

Installing the Interface Module

Check that the LRSI-F-14 interface module (or LRSI-B-14), shown in *Figure A-3,* was supplied. The fuses are shown in *Figure A-4*.
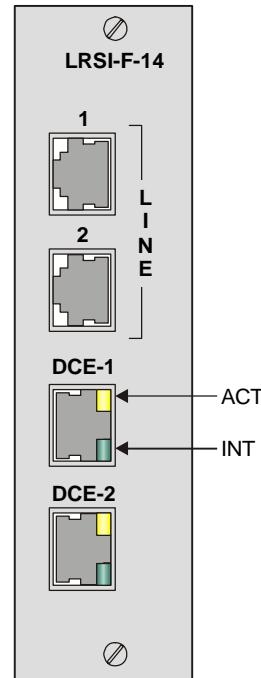

Figure A-3. LRSI-F-14 Interface Module
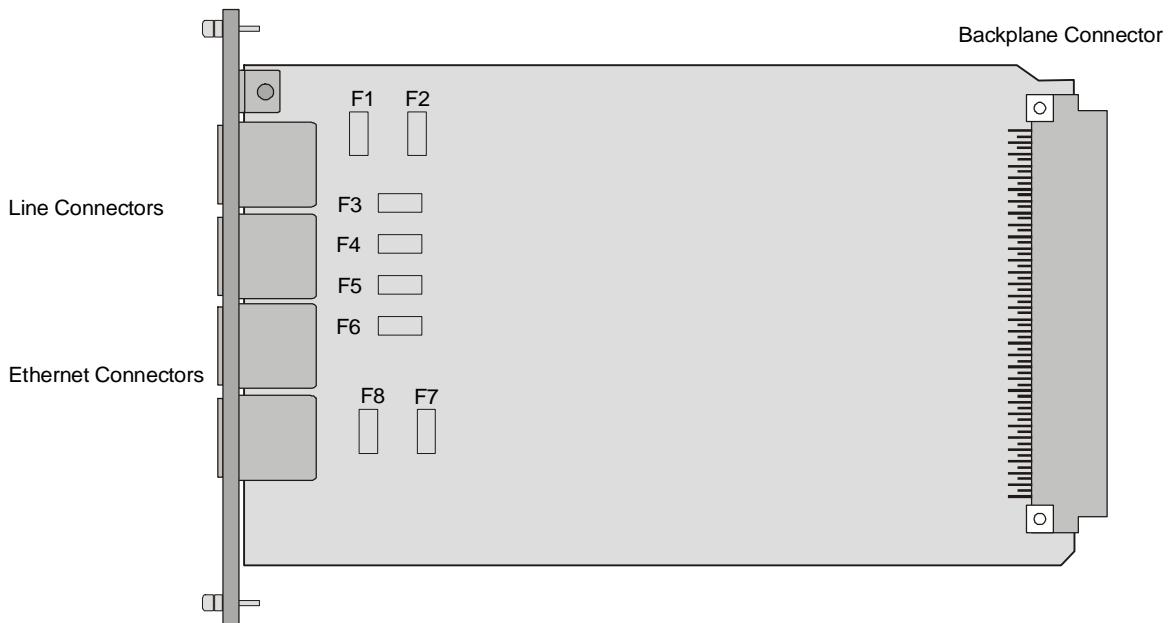
Figure A-4. LRSI-F-14 Interface Module Fuses

Installing the Hub

➤ **To install LRSI-F-14:**

1. Insert the LRSI-F-14 module into the upper section of the LRS-24F chassis above the ASM-40CD module, or into the back section of LRS-24B.

2. Fasten the screws to secure the module to the LRS-24 frame for proper grounding of the module panel.

Connecting the LRSI-F-14 Module

Table A-2 lists the pinout of the DCE-1/DCE-2 connector of the LRSI-F-14 interface module.

Table A-2. DCE-1/DCE-2 Connector Pinout

Pin	ID	Function	Direction
1	Tx+	Transmit – positive lead	Output
2	Tx–	Transmit – negative lead	Output
3	Rx+	Receive – positive lead	Input
4, 5	–	Not connected	–
6	Rx–	Receive – negative lead	Input
7, 8	–	Not connected	–

When connecting LRSI-F-14 to the LAN, use a cross cable for connection to a port that does not implement the crossover function internally. Otherwise, use a straight cable.

Note

- *To ensure compliance with electromagnetic compatibility (EMC) requirements, use only shielded cables when connecting the DTE ports to the LAN.*

- *Hubs usually do implement the crossover function internally while NICs and other devices do not.*

LED Indicators

Table A-3 lists the IR-ETH LED indicators and describes their functions.

Table A-3. IR-ETH LED Indicators

LED Name	Description	Color
INT	ON – Good link integrity	Green
ACT	ON – Data is received from the Ethernet attached segment or data is transmitted from the modem to the Ethernet segment	Yellow
ERR (on-board)	ON – LAN/WAN error	Red

Appendix B

IR-ETH/QN (IR-ETH/Q) Interface Module

B.1   Introduction

The IR-ETH/QN interface module includes a high performance self-learning Fast Ethernet bridge, which is connected to the LAN via a single 10BaseT or 100BaseT port, operating in full or half duplex and providing simple and cost-effective interconnection between 10/100BaseT LANs. The IR-ETH/QN interface module also supports IEEE 802.1/P frames and IEEE 802.1/Q frames, enabling VLAN applications.

The module automatically learns MAC addresses of the LAN to which it is connected. Its LAN table stores up to 1,024 addresses with 5-minute automatic aging.

Filtering and forwarding is performed at the maximum theoretical rate of 150,000 packets per second (wire speed). The buffer with 0.512 Mbit SRAM can hold 85 frames with a throughput latency of one frame. The forwarding of the multicast messages from LAN to WAN can be disabled.

Note   *ASM-40CD ordered with the IR-ETH/Q interface is supplied with the functionally equivalent IR-ETH/QN interface.*

B.2   Application

Figure B-1 shows a typical application of ASM-40CD operating opposite two remote ASM-40 modems connected to the 100BaseT LANs.
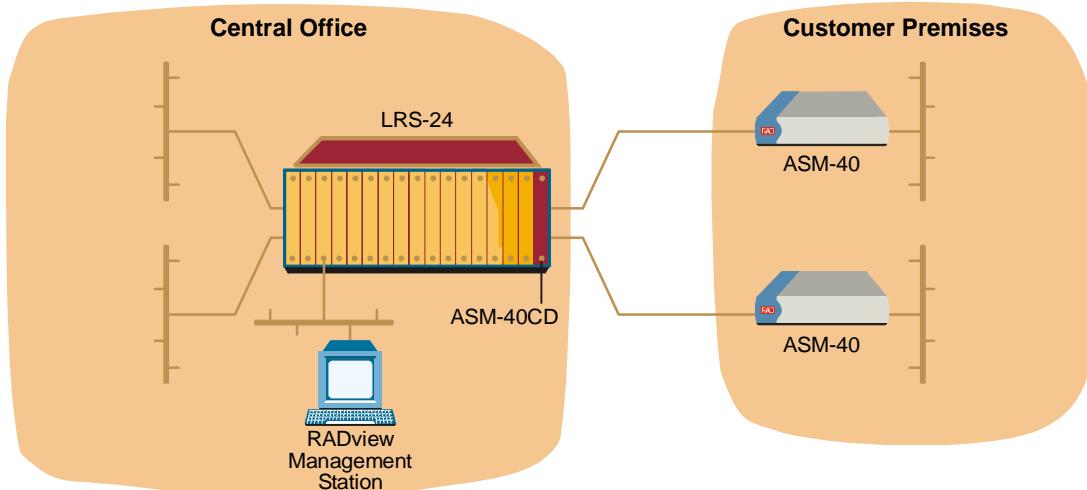
Figure B-1. Typical Application of ASM-40CD with IR-ETH/QN

B.3   Technical Specifications

Bridge	*LAN Table*	1,024 MAC addresses
	Aging	5 minute, automatic
	Filtering and Forwarding Rate	150,000 packets per second
	Buffer Size	85 frames
	Delay	1 frame
LAN	*Standard*	IEEE 802.3/Ethernet V.2 (relevant parts), IEEE 802.1q (relevant parts), 802.1p, 802.3x
	Data Rate	• 10BaseT: 10 Mbps (20 Mbps in full duplex) • 100BaseT: 100 Mbps (200 Mbps in full duplex)
	Line Code	• 10BaseT: Manchester • 100BaseT: MLT3
	Connector	Shielded RJ-45 socket
WAN	*Protocol*	HDLC
	Data Rate	According to the modem transmission rate

B.4   Installation and Operation

This section describes:

- Setting the IR-ETH/QN DIP switches

- Installing the IR-ETH/QN board on the ASM-40CD modem

- Installing LRSI-F-14 interface module.

Configuring IR-ETH/QN

Configure the IR-ETH/QN module by setting the DIP switches SW1 and SW2 in accordance with *Figure B-2*, *Table B-1* and *Table B-2*.

Note   *To make the changes effective, you have to remove the ASM-40CD module from the LRS-24 chassis and insert it back again.*
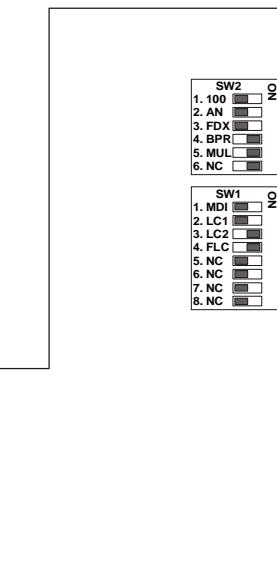
Figure B-2. DIP Switch Locations on the IR-ETH/QN Module

Table B-1. DIP SW1 Switch Settings

Section	Name	Description	Possible Settings	Factory Setting
1	MDI	Enables or disables automatic MDI/MDIX crossover	**ON –** Automatic MDI/MDIX crossover is enabled	
			OFF – Automatic MDI/MDIX crossover is disabled	OFF

Note: *Automatic MDI/MDIX crossover function is available only if the autonegotiation is enabled (see Table B-2).*

Section	Name	Description	Possible Settings	Factory Setting
2	LC1	–	Permanently set at the factory	OFF
3	LC2	–	Permanently set at the factory	ON
4	FLC	Enables or disables flow control	**ON** – Flow control is enabled	ON
			OFF – Flow control is disabled	
5-8	NC	–	Permanently set at the factory	OFF

Note

Sections 2, 3, 5, 6, 7 and 8 of the SW1 DIP switch are factory-set and must not be moved by the user.

Table B-2. DIP Switch SW2 Settings

Section	Name	Description	Possible Settings	Factory Setting
1	100	Selects the LAN speed	**ON** – LAN speed is set to 10 Mbps	OFF
			OFF – LAN speed is set to 100 Mbps	
2	AN	Controls the LAN autonegotiation	**ON** – LAN autonegotiation is disabled	OFF
			OFF – LAN autonegotiation is enabled	
3	FDX	Selects the LAN mode	**ON** – LAN half duplex mode	OFF
			OFF – LAN full duplex mode	
4	BPR	Controls the backpressure	**ON** – Backpressure is enabled	
			OFF – Backpressure is disabled	ON
5	MUL	Controls LAN to WAN multicasting	**OFF** – Multicast messages from LAN to WAN are blocked	
			ON – Multicast messages from LAN to WAN are not blocked	ON
6	NC	–	Permanently set at the factory	ON

Notes

- *Section 6 of the SW2 DIP switch is factory-set and must not be moved by the user.*
- *When autonegotiation is enabled, LAN speed and LAN mode are configured automatically (sections 1 and 3 are disabled).*

Installing the IR-ETH/QN Card

➤ To install the IR-ETH/QN card:

1. Press the IR-ETH/QN Ethernet card (with connectors facing down) against the ASM-40CD module connectors.

2. Fasten IR-ETH/QN to the modem.

Installing the Interface Module

Check that the LRSI-F-14 interface module (or LRSI-B-14), shown in *Figure B-3,* was supplied. The fuses are shown in *Figure B-4*.

|	
Note	*Fuses F3 and F4 of the IR-ETH/QN module must have ratings of 5A if the customer installs or replaces the module in the field. If they are not 5A they must be replaced.*
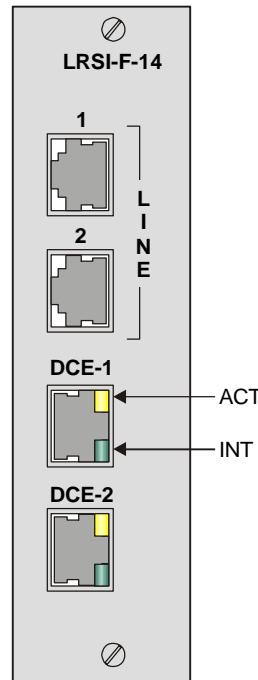
Figure B-3. LRSI-F-14 Front Panel
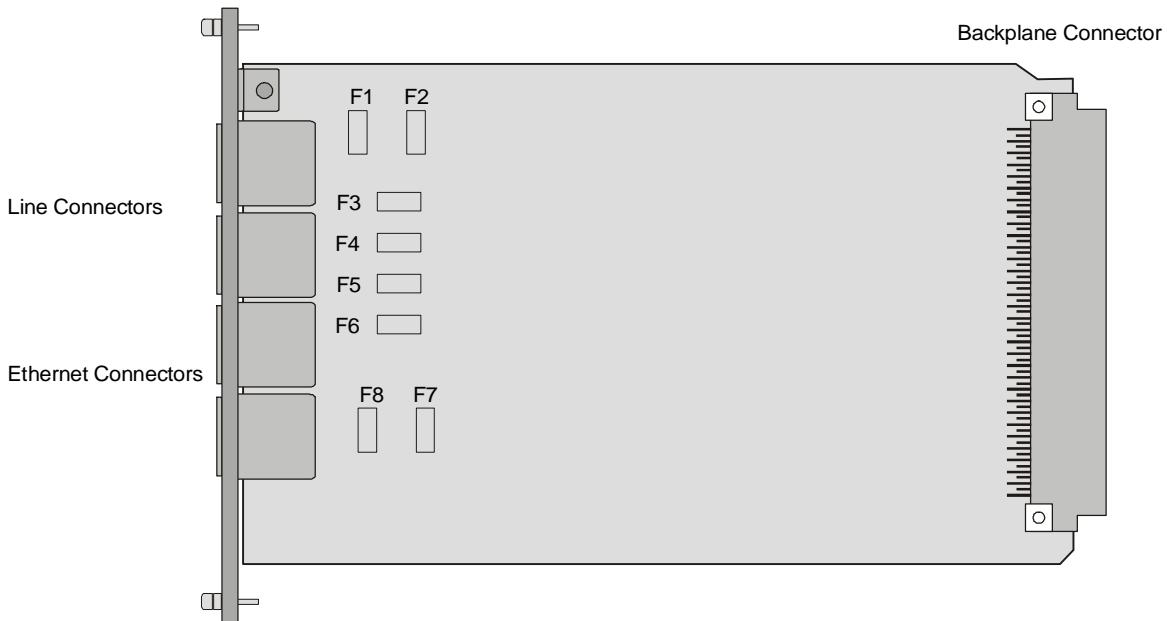
Figure B-4. LRSI-F-14 Interface Module Fuses

Installing the Hub

➤ **To install LRSI-F-14:**

1. Insert the LRSI-F-14 module into the upper section of the LRS-24F chassis above the ASM-40CD module, or into the back section of LRS-24B.

2. Fasten the screws to secure the module to the LRS-24 frame for proper grounding of the module panel.

Connecting the LRSI-F-14 Module

Table B-3 lists the pinout of the DCE-1/DCE-2 connector of the LRSI-F-14 interface module.

Table B-3. DCE-1/DCE-2 Connector Pinout

Pin	ID	Function	Direction
1	Tx+	Transmit – positive lead	Output
2	Tx–	Transmit – negative lead	Output
3	Rx+	Receive – positive lead	Input
4, 5	–	Not connected	–
6	Rx–	Receive – negative lead	Input
7, 8	–	Not connected	–

When connecting LRSI-F-14 to the LAN, use a cross cable for connection to a port that does not implement the crossover function internally. Otherwise, use a straight cable.

Note   *Hubs usually do implement the crossover function internally while NICs and other devices do not.*

LED Indicators

Table B-4 lists the IR-ETH/QN rear panel LED indicators and describes their functions.

Table B-4. LED Indicators

LED Name	Color	Description	Location
LINK	Green	ON – LAN link is ON	Connector
ACT	Yellow	ON or blinking – LAN is receiving data	Connector

Appendix C
Command List

This chapter lists:

- Commands to access screens:
  - Modem advanced setup
  - Modem setup
  - Modem status
  - Modem log file
- Screen parameters with their values and explanations.

C.1   Modem Advanced Setup

Setting Operational Parameters

The Modem Advanced Setup screen enables you to set the operational parameters of ASM-40CD. When this screen appears, all parameters are set to either the default or inactive state to prevent an unexpected modem response.

➤ **To configure the operational parameters:**

- Type **NODEnn DEF OPR<Enter>**.

  The screen shown in *Figure C-1* appears.

Note

nn = slot number, from 1 through 12.

```
MODEM ADVANCED SETUP
--------------------
          MODEM NAME       : ASM 40CD (m)
DEFINE MODULE PORT NUMBER                 : 1
MODEM STATUS                              : MASTER
SELECT MODEM                              : MODEM 1 LOCAL
1) MODEM RESET                            : DISABLE
2) STOP STATUS UPDATE                     : DISABLE
3) CHANGE LOCAL MODEM STATUS              : MASTER
4) MANAGEMENT FROM REMOTE MODEM           : NO
5) MODEM MANAGEMENT LINK                  : N/A
6) LOAD CONFIGURATION FROM                : N/A
7) I-TYPE (FAR_END MODEM type             : N/A
```

Figure C-1. Modem Advanced Setup Screen

Bolded rows in *Figure C-1* indicate parameters applicable to ASM-40CD and standalone modems. Additional, non-bolded parameters listed on a screen apply to other modems installed in the LRS-24 hub.

Table C-1 shows the operational parameters and options for ASM-40CD that can be viewed and/or modified using this screen.

Table C-1. Modem Advanced Setup

Parameter	Type	Function	Option	Option Indicates
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified.	ASM-40CD(m)	Master ASM-40CD
MODEM STATUS	Read	Viewing the modem configuration control status	Master	Modem controls its own configurable parameters
SELECT MODEM	Write	Selecting one of the two modems on the card, whose operational parameters you set using this screen.	Modem 1 Local Modem 2 Local	Operational Parameters will be set for the modem installed in the LRS-24 hub
STOP STATUS UPDATE	Write	Controling status information flow from the modem to CM-2.	Disable	Disables flow of status information from modem to CM-2. This may occur when CM-2 is required to service other LRS-24 modems during a state of alarm message overflow.
			Enable	Enables flow of status information from modem to CM-2.

C.2   Modem Setup

The Modem Setup screen enables you to set the transmission parameters of the local and remote modems.

Setting Modem Transmission Parameters

➤ To configure the modem transmission parameters:

• Type: **NODEnn DEF PRM**‹Enter›.

   The screen shown in *Figure C-2* appears.

Note   *nn = slot number, from 1 through 12.*

```
MODEM SETUP
                       MODEM NAME      :   ASM 40CD (m)
DEFINE MODEM PORT NUMBER : 1
MODEM STATUS            : MASTER PERMANENT
SELECT MODEM            : MODEM 1 LOCAL
SYNC/ASYNC              : N/A            CHARACTER LENGTH    : N/A
No. STOP BIT            : N/A            DATA RATE           : 2048k
PARITY                  : N/A            CD SENSE            : N/A
CLOCK SOURCE LOC/REM    : L(INT) R(RCV)  EXT SOURCE : N/A     PORT: N/A
INTERFACE               : N/A            RTS/CTS DELAY(0:255) : N/A
RTS TO DCD              : N/A            DTR TO DSR          : N/A
OUTPUT LEVEL            : N/A            INPUT LEVEL         : N/A
OUTPUT IMPEDANCE        : N/A ohm        INPUT IMPEDANCE     : 120 ohm
CARRIER CONTROL         : ON             ERROR CORRECTION    : N/A
RATE ADAPTION METHOD    : N/A            AIS                 : N/A
LINE CODING             : HDB83          PHANTOM             : OFF
T1 LINE LENGTH          : N/A
BRIDGING                : N/A            ETHERNET MODE       : N/A
MASK SIGNAL STATUS      : DATA:NO    RTS:NO    TD:NO    RD:NO
                          DCD:NO     TEST:NO   ERR:NO   LOS:NO
```

Figure C-2. Modem Setup Screen

Bolded rows in *Figure C-2* indicate parameters applicable to ASM-40CD and standalone modems. Additional, non-bolded parameters listed on a screen apply to other modems installed in the LRS-24 hub.

Table C-2 explains the transmission parameters and options for ASM-40CD that can be viewed and set using the Modem Setup screen. The **Write** fields can be changed only if the Master configuration mode is indicated in the Modem Status field.

Table C-2. Modem Setup Screen

Parameter	Type	Function	Options	Option Indicates
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified	ASM-40CD(m)	Master ASM-40CD
SELECT MODEM	Write	Selecting one of two modems whose operational parameters are set using this screen.	Modem 1 Local Modem 2 Local	Operational parameters will be set for the modem installed in the LRS-24 hub
DATA RATE	Write	Setting data rate transmitted between modems		32, 64, 128, 192, 256, 384, 512, 768, 1024, 1536, 1544, 1920, or 2048 kbps
CLOCK SOURCE LOCAL/REMOTE	Write	Timing mode *Note: Clock mode of both local and remote units must be configured manually.*	L(INT), R(RCV)	Crystal of the local modem is the clock source; remote modem is synchronized to the clock extracted from the receive signal

Parameter	Type	Function	Options	Option Indicates
			L(RCV), R(INT)	Local modem is synchronized to the clock extracted from the receive signal; crystal of the remote modem is the clock source
			L(EXT AUTO), R(RCV)	Local DTE is the clock source; remote modem is synchronized to the clock extracted from the receive signal
CARRIER CONTROL	Write	Blocking or allowing data transmission	ON	Data has been transmitted
			Control	Data is transmitted if RTS is on
LINE CODING	Write	Setting one of the G.703 line coding options	AMI, HDB3, B8ZS	
INPUT IMPEDANCE	Write	Setting input impedance	75, 100, 120Ω	75, 120Ω – for E1 100Ω – for T1
CARRIER CONTROL	Write	Setting the DCD function of the modem	On	DCD is on whenever data carrier is detected on receive side of modem
			Control	DCD is on whenever data carrier is detected on receive side of modem and a Request-To-Send command arrives from the far end modem
PHANTOM	Write	Connecting the power on the phantom to the line	ON	Power supply is connected to the line
			OFF	Power supply is not connected to the line

C.3   Modem Status

Viewing Modem Status

The Modem Status screen displays the system interfaces and status of front panel LEDs.

➤ To view the modem status:

- Type: **NODEnn DSP STT**<Enter>.

  The screen shown in *Figure C-3* appears.

Note

nn = slot number, from 1 through 12.

```
MODEM STATUS
                         MODEM NAME         : ASM 40CD (m)
DEFINE MODEM PORT NUMBER        : 1
SELECT MODEM                    : MODEM 1 LOCAL            REMOTE MODEM  : NULL
INTERFACE MODULE                : 26HD*2 & RJ45*2         REMOTE SLOT   : N/A
MODEL PORT                      : RS-530                  REMOTE MODEM LINE
CONNECTOR: TERM. BLOCK
SW VERSION                      : 01.07                   REMOTE MODEM FRONT
PANEL                : N/A
HW VERSION                      : 00.00                   HW PANEL VERSION   : 00
LED STATUS: 1)RTS OFF   2)DCD OFF   3)TEST OFF   4)ERR ON
           5)ELE-LOW ----- 6)ELE-AIS -----7)OPT-LOW -----8)OPT-AIS -----
LINK QUALITY                    : GOOD                    PS PHANTOM STATUS  : NO
BPV ERROR                       : 00 E+00                 CHASSIS      : CONNECT
FIBER OPTIC ERROR               : 00 E+00                 WAVE LENGTH   : N/A
LINE UTILITY                    : 00 %

BERT RUN TIME                   : 0                       BERT ERR SECONDS   : 0
BERT SYNC LOSS                  : 0                       BERT PRE FEC : 0
                                                          BERT POST FEC : 0
```

Figure C-3. Modem Setup Screen

Bolded rows in *Figure C-3* indicate fields applicable to ASM-40CD and standalone modems. Additional, non-bolded parameters listed on a screen apply to other modems installed in the LRS-24 hub.

The Modem Status screen fields and options for each field are explained in *Table C-3*.

Table C-3. Modem Status Screen

Parameter	Type	Function	Option	Option indicates:
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified	ASM-40CD(M)	Master ASM-40CD
SELECT MODEM	Write	Selecting one of the two modems whose interfaces and indications are displayed in this screen	Modem 1 Local Modem 2 Local	Operational parameters will be displayed for the modem installed in the LRS-24 hub
INTERFACE MODULE	Read	Viewing the type of Interface Module installed above the ASM-40CD in the LRS-24 hub.	26HD*2 & RJ45*2 (LRSI-F-5) RJ45*2 & 4381*2 (LRSI-F-14)	
MODEL PORT	Read	Viewing the type of digital interface mounted on the modem. This parameter is needed to associate a DCE connector with several digital interfaces mounted on the ASM-40CD module.	RS-530, V.36, V.35, X.21, RS-232, ETH, ETH/QN	

Parameter	Type	Function	Option	Option indicates:
REMOTE MODEM LINE CONNECTOR	Read	Viewing the line connector of the remote modem.	Terminal block BNC	Terminal block (balanced) BNC (unbalanced)
SW VERSION	Read	Indicates SW version of the EPROM	1.07	
LED STATUS	Read	Viewing the status of the front panel LED's: RTS, DCD, TEST, ERR	ON OFF	
PS PHANTOM STATUS	Read	Viewing the status of the phantom power supply	NO YES	Phantom power supply is OFF Phantom power supply is ON
CHASSIS	Read	View the status of chassis connection to GND	Connect Disconnect	Chassis is connected to GND Chassis is disconnected from GND
LINE UTILITY	Read	Viewing efficiency of the line		Percentage of time when the DATA change has occurred

C.4   Modem Log File

Viewing Log File

The Modem Log File screen enables you to view in chronological order all the events pertaining to the modem location specified in the Modem Select: Local or Remote. The modem type is shown in the Modem Name field:
ASM-40CD master, ASM-40CD slave, or ASM-40 standalone.

➤ **To access the modem log file:**

• Type: **NODEnn DSP LOG**‹Enter›.

The screen shown in *Figure C-4* appears.

Note

nn = slot number, from 1 through 12.

```
MODEM LOG FILE
          MODEM NAME      : ASM40CD(m)
DEFINE MODEM PORT NUMBER                    : 1
SELECT MODEM                                : MODEM 1 LOCAL
CODE       STATE       DESCRIPTION      TIME      DATE
10         ON          NearEndNoIRAdapter  08:27     2001-10—07
08         ON          NearEndSyncLoss     08:27     2001-10-07
```

Figure C-4. Example of Modem Log File Screen

Customer Response Form

RAD Data Communications would like your help in improving its product documentation. Please complete and return this form by mail or by fax or send us an e-mail with your comments.

Thank you for your assistance!

Manual Name: ASM-40CD Ver. 1.0

Publication Number: 695-202-05/07

Please grade the manual according to the following factors:

	Excellent	*Good*	*Fair*	*Poor*	*Very Poor*
Installation instructions	❏	❏	❏	❏	❏
Operating instructions	❏	❏	❏	❏	❏
Manual organization	❏	❏	❏	❏	❏
Illustrations	❏	❏	❏	❏	❏
The manual as a whole	❏	❏	❏	❏	❏

What did you like about the manual?

_____

_____

_____

_____

Error Report

Type of error(s) or
problem(s):

- ☐ Incompatibility with product
- ☐ Difficulty in understanding text
- ☐ Regulatory information (Safety, Compliance, Warnings, etc.)
- ☐ Difficulty in finding needed information
- ☐ Missing information
- ☐ Illogical flow of information
- ☐ Style (spelling, grammar, references, etc.)
- ☐ Appearance
- ☐ Other _____

Please list the exact page numbers with the error(s), detail the errors you found (information missing, unclear or inadequately explained, etc.) and attach the page to your fax, if necessary.

_____

_____

_____

_____

Please add any comments or suggestions you may have.

_____

_____

_____

You are:

- ☐ Distributor
- ☐ End user
- ☐ VAR
- ☐ Other

Who is your distributor? _____

Your name and company: _____

Job title: _____

Address: _____

Direct telephone number and extension: _____

Fax number: _____

E-mail: _____

International Headquarters

24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel. 972-3-6458181
Fax 972-3-6498250, 6474436
E-mail market@rad.com

North America Headquarters

900 Corporate Drive
Mahwah, NJ 07430, USA
Tel. 201-5291100
Toll free 1-800-4447234
Fax 201-5295777
E-mail market@radusa.com

www.rad.com

RAD
data communications
Innovative Access Solutions